



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND
INTERFERENCES

In re the Application of

Jacques HABATJOU

Application No.: 10/830,121

Examiner: J. BOECKMANN

Filed: April 23, 2004

Docket No.: 119426

For: A DEVICE FOR SPRAYING A SUBSTANCE, INCLUDING A
REMOVABLE RESERVOIR

BRIEF ON APPEAL

Appeal from Group 3752
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I. REAL PARTY IN INTEREST

The real party in interest for this appeal and the present application is L'OREAL, by way of an Assignment recorded in the U.S. Patent and Trademark Office at Reel 014856, Frame 0586.

II. STATEMENT OF RELATED CASES

There are no prior or pending appeals, interferences or judicial proceedings, known to any inventor, any attorney or agent who prepared or prosecuted this application or any other person who was substantively involved in the preparation or prosecution of this application, that may be related to, or that will directly affect or be directly affected by or have a bearing upon, the Board's decision in the pending appeal.

III. JURISDICTIONAL STATEMENT

The Board has jurisdiction under 35 U.S.C. §134(a). The Examiner mailed a Final Rejection on August 19, 2008, setting a three-month shortened statutory period for response. The time for responding to the Final Rejection expired on November 19, 2008. Rule 134. A Notice of Appeal and a Petition for Extension of Time requesting a three-month extension of time under Rule 136(a) were filed on February 19, 2009. The time for filing an Appeal Brief expires the later of two months from the filing of the Notice of Appeal, or one month from the mailing date of the Notice of Panel Decision if a Pre-Appeal Brief Request for Review is sought. Bd.R. 41.37(c) and Official Gazette Notice, July 12, 2005. No Pre-Appeal Request for Review was sought. The extendible period for filing the Appeal Brief therefore expires April 19, 2009. This appeal brief is being timely filed on May 19, 2009, the period having been extended by a concurrently filed Petition for Extension of Time.

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VI. STATUS OF AMENDMENTS

An Amendment After Final Rejection ("AAFR") was filed on January 21, 2009. By an Advisory Action ("AA") dated February 10, 2009, it was indicated that the requested AAFR had been entered.

VII. GROUND OF REJECTION TO BE REVIEWED

The following grounds of rejection are presented for review:

1) Claims 1, 2, 5-7, 9-17, 43 and 44 are rejected as having been obvious under 35 U.S.C. §103(a) over DE 3517122 to Schillig in view of U.S. Patent No. 4,272,768 to Rookard Jr. (hereinafter "Rookard");

2) Claims 3 and 4 are rejected as having been obvious under 35 U.S.C. §103(a) over Schillig in view of Rookard, and further in view of U.S. Patent No. 4,306,685 to Coffee;

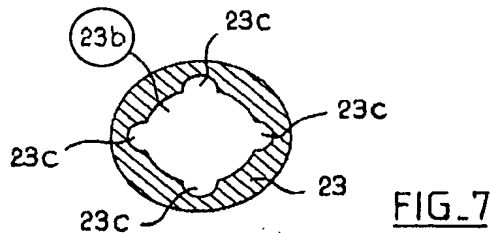
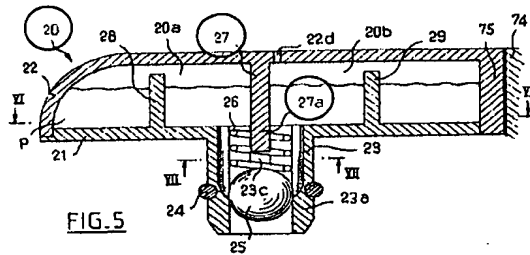
3) Claim 20 is rejected as having been obvious under 35 U.S.C. §103(a) over Schillig in view of U.S. Patent No. 1,603,612 to Krautzberger;

4) Claim 20 is rejected as having been obvious under 35 U.S.C. §103(a) over Krautzberger in view of Schillig; and

5) Claims 21-34, 36-38, 40-42, 45 and 46 are rejected as having been obvious under 35 U.S.C. §103(a) over Krautzberger in view of U.S. Patent Application Publication No. 2003/0108487 to Bara.

VIII. STATEMENT OF FACTS

1. Claim 1 is directed to a reservoir that contains a partition to separate compartments, each compartment separately containing a substance, the substance being a cosmetic or a care product.
2. Appellant's specification discloses "[w]hile the user is handling the spray device 1 to apply makeup, the angle of inclination of the reservoir 20 is liable to vary. The reservoir 20 is made in such a manner that the passage 23b is always fed with substance." (Appellant's specification, at paragraph [0100]).
3. Appellant's Figs. 5 and 7, reproduced below, show reservoir 20 and substance outlet passage 23. Circles are added to highlight features.



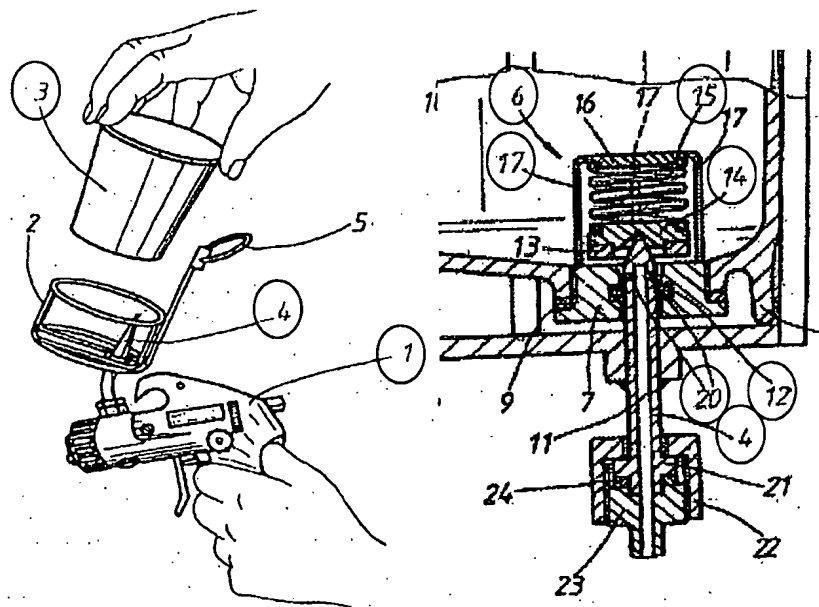
4. In the rejection of claims 1, 3-7, 9-17, 20, 43 and 44 under 35 U.S.C. §103(a), the Examiner asserts that Figs. 1 and 2 of Schillig teach "the reservoir comprising: ... a substance outlet passage, ... wherein the substance comprises a cosmetic or a care product," as recited in claim 1. (Final Office Action mailed August 19, 2008 ("FOA"), at pages 2-3).
5. The Examiner asserts that: spray gun 1 of Schillig corresponds to the claimed spray mechanism; valve 6 of Schillig corresponds to the claimed closure member, and valve 6 opens in canister 3 mounted on spiked tube 4; and

elements 7 and 11 correspond to the claimed substance outlet passage of a reservoir. (FOA, at page 2).

6. Fig. 1 of Schillig discloses how a user would insert canister 3 into a cage 2, and apparently would apply pressure to canister 3 or cage 2 until spiked tube 4 enters canister 3. (Fig. 1 of Schillig; Derwent Abstract of Schillig).

7. Figs. 1 and 2 of Schillig, reproduced below, show the spray device of Schillig.

Fig. 1 of Schillig **Portion of Fig. 2 of Schillig**



8. Fig. 2 of Schillig discloses the alleged valve 6, a member 17 that appears to enclose the alleged valve 6, an alleged flat disc valve 14 that makes contact with the inserted spiked tube 4, and a spring 15 that biases the flat disc valve 14. (Fig. 2 of Schillig; AA, at lines 3-13 of the Continuation Sheet "CS").

9. Schillig, in Fig. 2, discloses the use of side entry holes 20 for the liquid in canister 3 to enter spiked tube 4 and enter spray device 1. (Fig. 2 of Schillig;

AAFR, at page 9, lines 19-22).

10. Schillig, Fig. 2, uses "Radialdichtring" ("seal") 12 to create a seal around spiked tube 4 by forcing material in canister 3 in contact with spiked tube 4 when spiked tube 4 is inserted into canister 3 so that the liquid of canister 3 does not leak. (Fig. 2 of Schillig; AAFR, at page 9, lines 19-22).

11. The spray gun 1 of Schillig is used for spray painting objects such as a car door. (Derwent Abstract of Schillig).

12. The AA asserts that, in Figs. 1 and 2 of Schillig, spiked tube 4 does not penetrate into canister 3 itself, but instead stays inside the valve 6, the valve 6 being completely surrounded by member 17. (AA, at lines 5-7 of the CS).

13. Appellant disagrees.

14. Fig. 2 of Schillig discloses that member 17 protrudes into canister 3, and thus spiked tube 4 enters canister 3. (Fig. 2 of Schillig).

15. Fig. 2 of Schillig discloses the tip of spiked tube 4 extending above the bottom of canister 3 while the spring 15 is not fully compressed, as indicated by the spaces between the coils of the spring 15. (Fig. 2 of Schillig).

16. The Examiner concedes that Schillig fails to teach a reservoir comprising a first partition, first and second compartments capable of containing the substance, the compartments being arranged to feed the spray mechanism with the substance and being disposed on either side of said first partition. (FOA, page 2, lines 11-14, rejection of claim 1).

17. The Examiner argues that Rookard cures the deficiencies of Schillig.

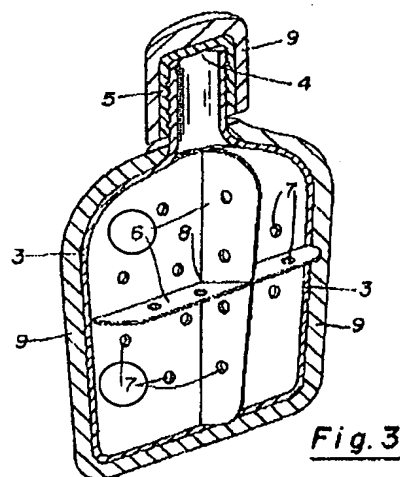
(FOA, at page 2, line 15 to page 3, line 4).

18. Appellant disagrees.

19. The Examiner cites Rookard for the features "at least a first partition; ... the passage opening out at one end thereof on either side of said first partition; ... first and second compartments capable of containing the substance, the compartments being arranged to feed the spray mechanism with the substance and being disposed on either side of said first partition," as recited in claim 1.

(FOA, at page 2, line 15-page 3, line 10, rejection of claims 1 and 2).

20. Fig. 3 of Rookard, reproduced below, shows the canteen of Rookard.



21. Rookard discloses that internal microwave-reflective baffles 6 divide a canteen into chambers, with openings between the chambers, to prevent uncontrolled sloshing and to result in a stable, desirable dynamic characteristics even when the canteen is partially full. (Rookard at col. 2, lines 36-41; Fig. 3 of Rookard; AA, at lines 3-13 of the CS).

22. The Examiner asserted it would have been obvious to one of ordinary skill in the art to add baffles 6 of the canteen of Rookard to canister 3 of Schillig in order to prevent uncontrollable sloshing which results in a stable reservoir even when partially full, as taught by Rookard. (FOA at page 3, lines 1-5, rejection of claim 1; FOA at page 10, lines 13-15, response to Appellant's argument in May 9, 2008 Amendment ("Amendment")).

23. Appellant disagrees.

24. Rookard discloses a canteen that can be comfortably worn when partially full and does not exhibit the undesirable dynamic characteristics caused by undamped sloshing of the liquid contents. (Rookard, at col. 2, lines 15-19; Amendment, at page 6, lines 12-16).

25. The Examiner has not established why one of ordinary skill in the art would have modified canister 3 of Schillig with baffles 6 of Rookard.

26. The Examiner has not shown that uncontrollable sloshing or the type of sloshing caused by wearing a canteen partially filled with drinkable liquids corresponds with any problems of a handheld paint spray gun and paint canister configuration, as taught by Schillig. (Amendment, at page 6, lines 12-16).

27. Rookard is non-analogous art. (Amendment, page 5, lines 12-16).

28. The Examiner, in response to Appellant's argument that Rookard is non-analogous art, asserted that both the Appellant's invention and Rookard's invention deal with reservoirs that contain multiple partitions that affect the

flow of the fluid inside the reservoirs. (FOA, page 10, lines 3-5).

29. Appellant disagrees.

30. The Examiner has not shown that Schillig has any reason to address fluid flow inside of canister 3.

31. A primary purpose of the baffles 6 in Rookard is to enable the canteen to constitute a highly reflective radar target, so that the user may be located if in distress. (see, e.g., Rookard, at col. 3, lines 10-23).

32. The reservoirs in Rookard and Schillig have different structural features.

33. Rookard teaches a canteen having an outlet passage ("neck") located in the center of the upper portion of the canteen. (Fig. 3 of Rookard).

34. The substance in the canteen flows through an outlet passage that does not protrude into the reservoir. (Fig. 3 of Rookard).

35. Other than baffles 6, the interior of the canteen of Rookard does not have any volumetric structural features that would correspond to volumes occupied by the valve 6 or member 17 of Schillig. (Fig. 3 of Rookard).

36. The interior of canister 3 of Schillig has a different configuration than the canteen of Rookard.

37. The interior of canister 3 of Schillig is cylindrical. (Fig. 2 of Schillig).

38. The bottom of the cylindrical interior of canister 3 of Schillig is sloped such that it has a lowest point near the circumference, apparently so that the last amounts of liquid gather at this point. (Fig. 2 of Schillig).

39. The lowest point of canister 3 is located near the tip of spiked tube 4, the valve 6 and member 17 of Schillig. (Fig. 2 of Schillig).

40. Thus, the substance in the canteen of Rookard and canister 3 of Schillig flow out from different parts of the respective containers.

41. Claim 1 recites, among other features, "at least a first partition, the substance outlet passage opening out at one end thereof on either side of said first partition."

42. The Examiner applied the §103(a) rejection of the FOA in a way to merely add baffles 6 of Rookard to the inside of canister 3 of Schillig to prevent sloshing. (AA, at lines 7-8 of the CS; Fig. 3 of Rookard; Fig. 2 of Schillig).

43. The Examiner fails to address the placement of baffles 6 of Rookard over spiked tube 4 or member 17 of Schillig. (Fig. 3 of Rookard; Fig. 2 of Schillig).

44. By not addressing the placement, the Examiner incorrectly assumes that baffles 6 of Rookard would be located above spiked tube 4 of Schillig to correspond to "the substance outlet passage opening out at one end thereof on either side of said first partition."

45. Appellant disagrees with this assumption.

46. A person of ordinary skill in the art would not have had reason to have the permeable baffles 6 disposed over spiked tube 4 or member 17. (Fig. 3 of Rookard; Fig. 2 of Schillig).

47. The Examiner asserts that the first partition of Rookard defines two sub-

compartments. (FOA, at page 3, lines 6-12).

48. The Examiner asserts that a person of ordinary skill in the art would modify canister 3 of Schillig with baffles 6 of Rookard to prevent uncontrollable sloshing. (AA, at lines 3-13 of the CS).

49. The amount of sloshing of liquid in a reservoir appears to be related to how a liquid can move in the volume of the reservoir.

50. If motivated to minimize sloshing, one of ordinary skill in the art would have designed equal-sized compartments separated by baffles 6 of Rookard so that each compartment would have the minimal volume.

51. Rookard shows baffles 6 in the center of the canteen dividing the canteen into equal-sized compartments. (Fig. 3 of Rookard).

52. Baffles 6 of Rookard have holes 7 to enable drinkable liquids to permeate through holes 7 regardless of the placement of baffles 6. (Rookard, at col. 3, lines 45-55).

53. Equal-sized compartments created by baffles 6 in the center of the canteen provide greater structural rigidity than baffles 6 allegedly disposed over member 17, which is closer to the side of canister 3 than the center.

54. If motivated to minimize sloshing, a person of ordinary skill in the art would have placed the permeable baffles 6 of Rookard in the center of canister 3 of Schillig. (Fig. 3 of Rookard; Fig. 2 of Schillig).

55. The Examiner asserts: that American Heritage Dictionary defines

cosmetic as something superficial that is used to cover a deficiency or defect; that paint is used to cover a deficiency or defect; and thus a paint is a cosmetic. (FOA, at page 11, lines 6-13).

56. The term "care products" is used to generically refer to any substance that is used to effect one or more external body conditions, such as conditions of the skin, hair and nails. For example, such substances include, but are not limited to, treatment products, such as sunscreen, moisturizer and/or medicaments, cleansing products and cosmetic products, such as makeup products, or any other known or later developed product that may be applied to the body. An example of a cosmetic is a foundation. (Appellant's specification, at paragraphs [0039] and [0067]).

57. One of ordinary skill in the art understood that spray paint may be toxic.

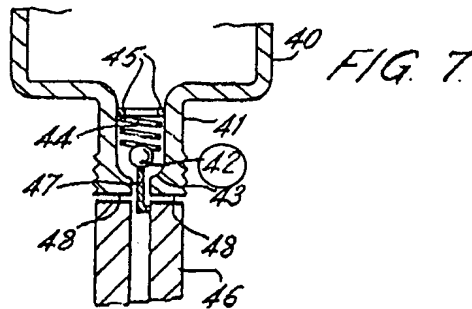
58. Claim 3 recites, among other features, "the closure member comprises a ball check valve."

59. Claims 3 and 4 are directed to a check valve in a reservoir to enable a substance to flow out of the reservoir's substance outlet passage when the reservoir is mounted on the spray device, and to seal the substance in a removable reservoir when the reservoir is not mounted. (Appellant's specification, at paragraphs [0095]-[0098]).

60. In rejecting claims 3-4 under 35 U.S.C. §103(a), the Examiner conceded Schillig does not disclose a ball check valve. (FOA, page 4, at lines 11-13).

61. The Examiner asserts that Coffee cures the deficiencies of Schillig and discloses ball 42 that corresponds to the claimed ball check valve. (FOA, page 4, at lines 13-16).

62. Fig. 7 of Coffee shows the configuration of a ball valve.



63. In Fig. 7 of Coffee, container 40 having neck 41 is shown, inside which is a ball valve comprising ball 42 urged against seat 43 by compression spring 44 mounted against stops 45. The ball is forced inwards away from the seat 43 by a finger 47. (Coffee, at col. 7, lines 22-33; Fig. 7).

64. The Examiner asserts that replacing the spiked tube and alleged disc valve of Schillig with the ball valve of Coffee would be a simple replacement that leaves everything else of Schillig intact. (AA, at lines 8-14 of the CS).

65. Appellant disagrees.

66. The alleged simple replacement would remove at least parts 4, 6, 7, 11-17 and 20-24 of Schillig. (Fig. 7 of Coffee; Fig. 2 of Schillig).

67. After the replacement, it appears that only the spray gun 1 and cage 2 of Schillig would be left intact. (Fig. 2 of Schillig).

68. One of ordinary skill in the art would not have modified Schillig to

replace the spiked-tube configuration with the Coffee ball valve configuration.

69. The Examiner asserts that the ball check valve of Coffee in the alleged modification would create a more uniform seal when the valve is closed.

70. There is no indication in Schillig or Coffee that spiked tube 4 and valve 6 of Schillig is not adequate, or that one of ordinary skill in the art would look to a ball valve to create a better seal for a container having the configuration of canister 3 of Schillig (Fig. 2 of Schillig; Fig. 7 of Coffee).

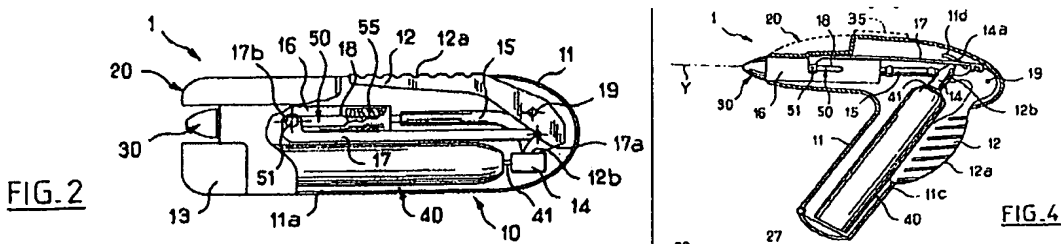
71. In Coffee, the liquid to be sprayed does not travel inside the finger 47; i.e., finger 47 does not have a tube. (Fig. 7 of Coffee).

72. The alleged modification would have changed the principle of operation of Schillig.

73. Claim 20 recites "a housing for receiving a vector gas supply."

74. As described in Appellant's specification, providing "a housing for receiving the vector gas supply" may contribute to the benefits of making the device portable and cordless. (Appellant's specification, at paragraph [0048]).

75. Figs. 2 and 4 of Appellant's drawings show two examples of a "housing for receiving the vector gas supply." (Appellant's specification, at paragraphs [0048], [0054], [0069], [0072]; Appellant's Fig. 2, Ref. No. 11a and Fig. 4).



pipe 6b. (Fig. 1 of Krautzberger, Krautzberger, col. 1, lines 29-30).

83. A pipe can be connected to a "supply," but a pipe or its contents is not a "supply."

84. Claim 20 does not recite "a vector gas supply tube" or "a vector gas supply pipe" or "a vector gas."

85. A vector gas supply that would fit inside pipe 6b is too small to be of practical use. (AAFR, at page 9, lines 16-17).

86. A person of ordinary skill in the art would not have understood "vector gas" and "vector gas supply" to mean "vector gas."

87. Krautzberger does not disclose any features that can reasonably correspond to a "vector gas supply."

88. Claim 21 recites "the dispenser valve being secured to the pressurized receptacle and being triggered by tilting a control rod." (AAFR, claim 21).

89. Appellant's Figs. 2 and 4 show different embodiments of spray devices having a lever 12, the actuation of which moves rod 17 and plunger 50 and presses against an endpiece 14, causing the tilting of the end piece 14 and a control rod 41, the control rod 41 being secured to a pressurized receptacle 40. (Appellant's Fig. 2 and 4; Appellant's specification, at paragraphs [0072], [0083], [0088], and [0089]).

90. In rejecting claims 21-34, 36-38, 40-42, 45 and 46 under §103(a), the Examiner asserts that Krautzberger teaches "the dispenser valve being secured

to the pressurized receptacle and being triggered by tilting a control rod," except for a "pressurized receptacle." (AA, at lines 23-28 of the CS).

91. In rejecting claim 21, the Examiner concedes that Krautzberger does not disclose that vector gas is stored in a pressurized receptacle, and asserts that Bara remedies the deficiencies of Krautzberger. (FOA, page 6, line 10 - page 7, line 5).

92. The Examiner asserts that air valve 20 of Krautzberger corresponds to "dispenser valve." (AA, at lines 25-28 of CS).

93. Krautzberger does not teach or render obvious any features that correspond to the above-quoted feature, because air valve 20 of Krautzberger (alleged "dispenser valve") is not "secured to the pressurized receptacle" of Bara. (Statement of Substance of Interview, at page 3, lines 10-13).

94. The Examiner noted that the air valve 20 of Krautzberger is secured to the paint gun. (AA, at lines 25-28 of CS).

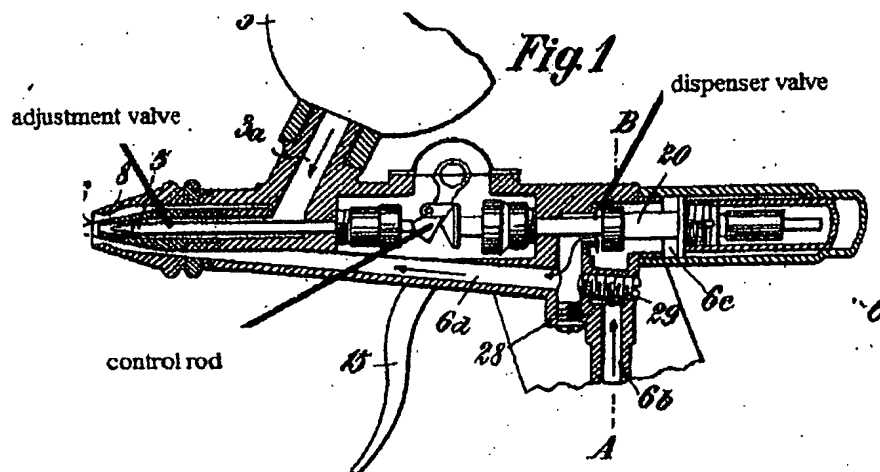
95. The Examiner alleges that the pressurized receptacle 2 of Bara can be connected to pipe 6b of Krautzberger. (AA, at lines 25-28 of CS).

96. The Examiner argues that, because the pressurized receptacle of Bara is connected to the spray gun of Krautzberger in the alleged combination, and the dispensing valve is part of the spray gun, then the dispensing valve is therefore secured to the pressurized receptacle. (AA, at lines 26-28 of the CS).

97. Appellant disagrees.

76. In rejecting claim 20, the Examiner cites Krautzberger for "a housing for receiving a vector gas supply." (FOA, at page 10, line 16 to page 11, line 5).

77. Fig. 1 of Krautzberger was modified by the Examiner to add the terms "adjustment valve," "dispenser valve" and "control rod." (AA, page 2).



78. The FOA asserts that the "vector gas supply" enters the Krautzberger device through pipe 6b. (FOA, at page 11, line 1; Fig. 1 of Krautzberger).

79. The FOA asserts that the compressed air is the vector gas supply. (FOA, at page 11, lines 1-3; AA, at lines 15-22 of the CS).

80. Appellant disagrees.

81. A person of ordinary skill in the art would have understood that the ordinary meaning of the term "supply," when used as a noun, refers to a source. (Statement of Substance of Interview, at page 3, lines 5-6).

82. Krautzberger discloses a spray gun that is operated by lever 15, which controls elements 5 and 20, and compressed gas that enters the gun through

98. In the alleged configuration, the air valve 20 of Krautzberger can be operated independently (e.g., has freedom of motion) of the asserted connection to the pressurized receptacle of Bara, i.e., whether or not such a pressurized receptacle is connected to the spray gun.

IX. ARGUMENT

Appellant respectfully asserts that Schillig, Rookard and Coffee, Schillig and Krautzberger, and Krautzberger and Bara would not have rendered the claimed invention obvious to one of ordinary skill in the art.

A. Claims 1, 5-7, 9-17, 43 and 44 Would Not Have Been Obvious Over Schillig in View of Rookard

Claims 1, 5-7, 9-17, 43 and 44 are rejected over Schillig in view of Rookard. Claims 5-7, 9-17, 43 and 44 all depend from independent claim 1.

This rejection should be reversed because the Examiner has not established that it would have been obvious to one of ordinary skill in the art to combine the references in a manner corresponding to the recited features of claim 1. The Examiner has not established 1) the positions of baffles 6 of the canteen of Rookard within canister 3 of Schillig; and 2) why one of ordinary skill in the art would have modified Schillig to include the baffles of Rookard.

1. The Examiner's Modification of the Canister of Schillig to Include the Baffles of Rookard Would Not Have Resulted in the Claimed Reservoir

Claim 1 recites, among other features, "a reservoir comprising: at least a first partition; a substance outlet passage, the passage opening out at one end thereof on either side of said first partition; and a closure member." (Facts 1-3).

The Examiner asserts that gun 1 of Schillig corresponds to the claimed spray mechanism; valve 6 of Schillig corresponds to the claimed closure member, and valve 6 opens in canister 3 mounted on spiked tube 4; and

elements 7 and 11 correspond to the substance outlet passage of a reservoir. (Fact 57). The Examiner concedes that Schillig fails to teach a reservoir comprising a first partition; and first and second compartments capable of containing the substance, the compartments being arranged to feed the spray mechanism with the substance and being disposed on either side of said first partition. (Fact 16). The Examiner relies on Rookard to remedy these shortfalls in Schillig and asserts that baffles 6 of Rookard correspond to the claimed first partition. (Fact 19).

In the Advisory Action ("AA"), the Examiner asserts that the alleged valve 6 of Schillig is completely surrounded by member 17 of Schillig. (Fact 12). The Examiner further asserts that member 17 would protect baffles 6 of Rookard from spiked tube 4 of Schillig when container 3 is connected to gun 1 of Schillig. (Facts 12-15). In response to this new argument, Appellant's following response includes a new argument that has not been previously presented to the Examiner. One of ordinary skill in the art would not have found it obvious to modify the canister of Schillig with the baffles of Rookard to achieve the claimed reservoir.

The Examiner asserts that it would have been obvious to modify the reservoir of Schillig to include baffles 6 of Rookard to prevent sloshing. (FOA, page 3, lines 1-4). (Facts 17, 19, 22 and 48). Such an analysis fails for at least the following reasons.

The Examiner fails to establish the placement position of baffles 6 over spiked tube 4 or member 17. (Facts 13, 25 and 32-37). The Examiner is silent as to the position of baffles 6 of Rookard in canister 3 of Schillig, and merely asserts that "it would have been obvious to one of ordinary skill in the art ... to add the partition of Rookard, Jr.'s reservoir to the reservoir of Schillig." (FOA, page, 3 lines 1-4). (Facts 22, 43 and 44). The Examiner has not established that one of ordinary skill in the art would have inserted baffles 6 of Rookard into the reservoir of Schillig at a position corresponding to "the substance outlet passage opening out at one end thereof on either side of said first partition." (Facts 40-42). For the Examiner to establish that this combination reasonably corresponds to this recited feature, baffles 6 of Rookard would have to be located over member 17 of Schillig, more specifically, spiked tube 4 of Schillig. (Facts 44 and 45).

The Examiner has not, and cannot, establish the placement of baffles 6 of Rookard in canister 3 of Schillig over member 17 of Schillig, or more specifically, spiked tube 4 of Schillig. (Facts 40 and 43). The Examiner asserts that the first partition of Rookard defines two sub-compartments. (Fact 47). Yet, in Fig. 2 of Schillig, spiked tube 4 and member 17 are disposed close to the edge of canister 3. (Facts 38 and 39). Thus, at best, the alleged modification would result in baffles 6 being located in the center of canister 3. Because baffles 6 in the center of canister 3 do not correspond to the near-the-

edge location of member 17 or spiked tube 4, this placement would not have resulted in the claimed "the substance outlet passage opening out at one end thereof on either side of said first partition."

Even in the improper hindsight combination, the baffles must be located in the center of the Schillig canister to prevent sloshing as alleged by the Examiner. The amount of sloshing in a reservoir appears to be related to the volume in that reservoir in which a liquid could move. (Fact 49). If motivated to minimize sloshing, one of ordinary skill in the art would have sub-divided a reservoir into equal-sized compartments, separated by the baffles, so that each compartment would have the minimal volume. (Facts 50 and 52). In fact, as discussed above, Rookard shows baffles 6 in the center of the canteen dividing the canteen into equal-sized compartments. (Fact 51). To minimize sloshing in the asserted hindsight combination, a person of ordinary skill in the art would have placed the permeable baffles 6 of Rookard in the center of canister 3 of Schillig. (Facts 50-54).

Also, by placing baffles 6 in the center of the canteen to create equal-sized compartments, baffles 6 provide greater structural support than non-centrally located baffles 6. (Fact 53). Thus, a canister 3 of Schillig having a baffle 6 of Rookard disposed over member 17 of Schillig, as alleged, which is closer to the edge of canister 3, would be weaker and would have one larger compartment that would provide for greater sloshing. (Fact 53).

As such, even improperly combining Schillig with Rookard for the asserted hindsight reasoning, a point with which Appellant disagrees, one of ordinary skill in the art would have placed baffles 6 of Rookard in the center of canister 3 of Schillig to provide a stable reservoir when the reservoir is only half full and to minimize sloshing. (Fact 21). Such a configuration would also provide greater structural support than a non-centered baffle cluster. (Fact 53).

Thus, a person of ordinary skill in the art would not have found it obvious to place a baffle 6 directly over spiked tube 4 to achieve the claimed "substance outlet passage opening out at one end thereof on either side of" the baffle. Therefore, the asserted combination is improper and fails to render the above-quoted features of claim 1 obvious.

2. One of Ordinary Skill in the Art Would Not Have Looked to Rookard to Modify Schillig at the Time of the Invention

The Examiner relies on Rookard to remedy the above-described shortfalls in Schillig. (FOA, page 3, lines 1-10) (Facts 16, 19, 20 and 28). In response, Appellant previously pointed out to the Examiner why the Examiner is believed to have erred. (Amendment filed May 9, 2008 ("Amendment"), at pages 5-6.)

The Examiner fails to establish that sloshing is a problem in Schillig or in cosmetic sprayers. (Facts 26 and 30). The Examiner asserts that it would have been obvious to one of ordinary skill in the art to add baffles 6 of the canteen of

Rookard to the paint canister 3 of Schillig "in order to prevent uncontrollable sloshing which results in a stable reservoir even when partially full, as taught by Rookard." (Fact 22). The Examiner's mere conclusion that it would have been obvious to make the asserted modification to prevent sloshing does not articulate a reason to combine Schillig with Rookard. Contrary to the Examiner's assertion, there is no evidence or suggestion that the paint reservoir of Schillig or a cosmetic sprayer suffers from "uncontrollable sloshing." (Fact 26).

Rather, this purported reasoning is derived from Rookard, and concerns canteens worn, presumably, on the hip. (Fact 21). Rookard discloses that a canteen having baffles 6 can be comfortably worn when partially full and does not exhibit the undesirable dynamic characteristics caused by undamped sloshing of the liquid contents. (Facts 21 and 24). The type of sloshing caused by wearing a canteen partially filled with water, or other drinkable liquids, does not obviously correspond with any problems suggested by Schillig or associated with a handheld paint spray gun as taught by Schillig or even a cosmetic sprayer. (Facts 23 and 26).

Also, it is unreasonable to assert that Rookard constitutes analogous art with respect to the claimed subject matter. With reference to MPEP §2141.01(a), the standard for finding a reference to be analogous prior art is that "[i]n order to rely on a reference as a basis for rejection of an applicant's

invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." *In re Oetiker*, 977 F.2d 1443, 1446 (Fed. Cir. 1992).

Rookard's canteens cannot reasonably be considered to be within the same field of Applicant's endeavor. In other words, the field of cosmetic applicators is obviously different from that of canteens. This is equally true with respect to the fields of paint sprayers and canteens.

In addition to being in a different field from that of the inventor's endeavor, because of the matter with which it deals, Rookard would not logically have commended itself to the present inventor's attention in considering his problem. (Facts 26 and 30). A survival canteen with radar-reflective baffles cannot reasonably be considered to be matter that would have logically commended itself to the problems confronting Appellant in designing an improved spray mechanism for applying substances comprising a care product. (Facts 30 and 31). As such, Rookard is not analogous art. (Fact 27).

In addition, the spray paint of Schillig cannot reasonably correspond to the recited "cosmetic or care product" limitation of claim 1. (Facts 11 and 56). Appellant's specification clearly defines and consistently uses the terms cosmetic and care product. (Fact 56). It would not be reasonable to apply the spray paint of Schillig to one's face due to the toxicity of spray paint. (Facts 11 and 57). The Examiner asserts that paint is "a cosmetic" because it can cover a

defect. (Fact 55). Under this logic, a wall would be "a cosmetic." This logic is untenable. The Examiner has established no reason, nor would one of ordinary skill in the art have had a reason, to use "a cosmetic or care product" in a Schillig paint sprayer.

For at least these reasons, Rookard cannot be properly combined with Schillig, and even the improper combination would not have resulted in the claimed invention.

* * * * *

For all of the above reasons, the rejection of claim 1 and its dependent claims should be reversed.

**B. Claims 3 and 4 Would Not Have Been Obvious Over
Schillig in View of Rookard, and Further in View of Coffee**

The Examiner concedes that Schillig and Rookard do not disclose a ball check valve, as recited in claim 3. (Facts 58 and 60). The Examiner states that Coffee teaches a ball valve, and that it would have been obvious to replace the system of Schillig with the ball valve of Coffee because such a replacement is a simple replacement that leaves everything of Schillig intact. (Facts 61, 64 and 69). In response, Appellant previously pointed out to the Examiner why the Examiner is believed to have erred. (Facts 65, 68 and 70). The asserted modification would improperly change the principle of operation of the spray device of Schillig. (Fact 72).

As can be best understood from Fig. 1 of Schillig, the principle of operation involves the following: the user holds spray device 1; cage 2 holds and locks in canister 3 using the locking device 5 and then is guided along the spiked tube 4 down to the spray device where it is pierced by spiked tube 4. (Fact 6).

As can be best understood from Fig. 2 of Schillig, the principle of operation also involves using "Radialdichtring" ("seal") 12 to create a seal around the inserted spiked tube 4 by forcing material to be in contact with spiked tube 4. (Fact 10). Side entry holes 20 are disposed on spiked tube 4 for the liquid in canister 3 to enter and flow through spiked tube 4 down to spray device 1. (Fact 9).

Fig. 7 of Coffee shows the features that the Examiner asserts correspond to the features of Schillig. (Facts 62 and 63). In Fig. 7 of Coffee, container 40 having neck 41 is shown, in which a ball valve comprising a ball 42 is urged against a seat 43 by compression spring 44 mounted against stops 45. (Facts 62 and 63). The ball is forced inwards away from seat 43 by finger 47. (Fact 63).

Finger 47 operates differently than spiked tube 4 of Schillig. In Coffee, liquid to be sprayed does not travel inside finger 47; i.e., finger 47 does not contain an internal tube. (Fact 71). Coffee does not show any fingers 47 that are bent in the shape of spiked tube 4 of Schillig. (Fact 62).

The asserted modification would thus change the principle of operation of Schillig. (Fact 72). Spiked tube 4 of Schillig, because it has been replaced by finger 47 of Coffee, would no longer pierce the bottom of canister 3 of Schillig. (Facts 6, 7 and 71). Fluid would no longer flow into and down the inserted spiked tube 4 through side entry holes. (Facts 6, 7 and 9). The seals 12 of Schillig would no longer have any function. (Fact 10). In fact, the asserted modification would not be a simple replacement. The asserted modification would only leave the original spray device 1 and cage 2 of Schillig. (Facts 66 and 67).

Thus, Coffee does not have features that can reasonably correspond to the features of Schillig and still perform the functions required by Schillig.

Therefore, it would not have been obvious to combine these references in the asserted manner, and the rejections of claims 3 and 4 should be reversed.

C. Claim 20 Would Not Have Been Obvious Over Schillig in View of Krautzberger

The Examiner states that Krautzberger teaches "a housing for receiving a vector gas supply," as recited in claim 20. (Fact 76). In response, Appellant previously pointed out to the Examiner why the Examiner is believed to have erred. (Fact 86). The applied references do not disclose or render obvious "a housing for receiving a vector gas supply," as recited in claim 20.

Figs. 2 and 4 of Appellant's drawings show two examples of a "housing for receiving the vector gas supply." (Facts 73-75). As described in

Appellant's specification, providing "a housing for receiving the vector gas supply" may contribute to the benefits of making the device portable and cordless. (Fact 74).

The Examiner cites Krautzberger for "a housing for receiving a vector gas supply." (Facts 76 and 77). The Examiner asserted that the "vector gas supply" enters the device of Krautzberger through pipe 6b, and that Krautzberger is fully capable of receiving a vector gas supply. (Facts 77 and 78). Krautzberger discloses that compressed air enters the appliance through the pipe 6b. (Fact 82).

The Examiner asserted that the compressed air is considered to be the vector gas supply. (Fact 79). A person of ordinary skill in the art would have understood that the ordinary meaning of the term "supply," when used as a noun, refers to a source. (Fact 81). A pipe can be connected to a "supply," but neither a pipe nor its contents is a "supply." (Fact 83). Claim 20 does not recite "a vector gas supply tube" or "a vector gas supply pipe" or even "a vector gas." (Fact 84). A person of ordinary skill in the art would have understood that "vector gas supply" does not correspond to "vector gas." (Facts 80 and 86).

In addition, the pipe 6B of Krautzberger is too small to be a "housing for receiving the vector gas supply." (Fact 85). A housing that is too small would not allow the supply to provide enough vector gas for practical use of the

device. (Fact 85). Therefore, Krautzberger is not capable of receiving a vector gas supply.

Therefore, Krautzberger does not disclose any features that can reasonably correspond to a "vector gas supply." (Fact 87). The rejection of claim 20 should be reversed.

D. Claim 20 Would Not Have Been Obvious Over Krautzberger in View of Schillig

As established above in Section C, Krautzberger in view of Schillig does not disclose any features that corresponds to "a housing for receiving a vector gas supply." The rejection of claim 20 should be reversed.

E. Claims 21-34, 36-38, 40-42, 45 and 46 Would Not Have Been Obvious Over Krautzberger in View of Bara

Claims 21-34, 36-38, 40-42, 45 and 46 are rejected over Krautzberger in view of Bara. Claims 22-34, 36-38, 40-42, 45 and 46 all depend from independent claim 21.

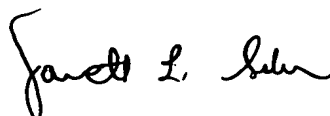
The Examiner states that Krautzberger in view of Bara teaches "the dispenser valve being secured to the pressurized receptacle and being triggered by tilting a control rod," as recited in claim 21. (Facts 90 and 91). In response, Appellant previously pointed out to the Examiner why the Examiner is believed to have erred. (Fact 93). The asserted combination does not teach or render obvious "the dispenser valve being secured to the pressurized receptacle and being triggered by tilting a control rod," as recited in claim 21. Facts 88-89.

The Examiner asserts that air valve 20 is secured to the paint gun. (Fact 94). The Examiner asserts that air valve 20 of Krautzberger corresponds to the "dispenser valve" recited in claim 21. (Fact 92). The Examiner alleges that the pressurized receptacle 2 of Bara can be connected to pipe 6b of Krautzberger. (Fact 95). The Examiner argues that, because the pressurized receptacle of Bara is connected to the spray gun of Krautzberger in the alleged combination, and the dispensing valve is part of the spray gun, then the dispensing valve is therefore secured to the pressurized receptacle. (Fact 96).

However, being secured to a paint gun does not correspond to "being secured to a pressurized receptacle and being triggered by tilting a control rod." (Fact 93). Krautzberger does not teach, or render obvious, any features that correspond to the above-quoted feature, because air valve 20 of Krautzberger cannot reasonably be considered to be "secured to the pressurized receptacle." (Fact 93). Air valve 20 of Krautzberger can be operated independently (e.g., has freedom of motion) of the asserted connection to the pressurized receptacle of Bara, i.e., whether or not such a pressurized receptacle is even connected to the spray gun. (Facts 97 and 98). Therefore, one of ordinary skill in the art would not have had any reason to combine Krautzberger and Bara to render obvious the subject matter of claim 21, as amended, and even if in hindsight having done so, would not have achieved the claimed invention. Thus, the rejection of claims 21-34, 36-38, 40-42, 45 and 46 should be reversed.

For all of the reasons discussed above, it is respectfully submitted that the rejections are in error and that claims 1, 3-22 and 25-46 are in condition for allowance. For all of the above reasons, Appellant respectfully requests this Honorable Board to reverse the rejections of claims 1, 3-22 and 25-46.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Jarrett L. Silver".

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X. APPENDIX A - CLAIMS SECTION

1. (Rejected) A spray device comprising:

 a spray mechanism; and

 a reservoir containing a substance for spraying, arranged in such a manner as to be capable of being removably mounted on the device so that the substance can be selectively dispensed by the spray mechanism, the reservoir comprising:

 at least a first partition;

 a substance outlet passage, the passage opening out at one end thereof on either side of said first partition;

 a closure member for closing said passage when the reservoir is not mounted on the device, the spray mechanism and the closure member being arranged in such a manner that the closure member opens in response to the reservoir being mounted on the device; and

 first and second compartments capable of containing the substance, the compartments being arranged to feed the spray mechanism with the substance and being disposed on either side of said first partition, wherein the substance comprises a cosmetic or a care product.

2. (Canceled)

3. (Rejected) A device according to claim 1, wherein the closure member comprises a ball check valve.

4. (Rejected) A device according to claim 3, wherein the spray mechanism comprises a portion in relief arranged, when the reservoir is mounted on the device, to move the ball from a first position closing the passage to a second position opening the passage.

5. (Rejected) A device according to claim 1, wherein the reservoir comprises at least one second partition on one side of the first partition, the second partition being associated with the first compartment and defining therein two sub-compartments that are in communication with each other.

6. (Rejected) A device according to claim 5, wherein the reservoir comprises at least one third partition associated with the second compartment and defining therein two sub-compartments, the first partition being situated between the second and third partitions.

7. (Rejected) A device according to claim 1, wherein the reservoir comprises a base portion and a lid-forming portion fitted on the base portion.

8 (Objected To) A device according to claim 6, wherein the reservoir comprises a base portion and a lid-forming portion fitted on the base portion, and wherein the second and third partitions are made integrally with at least one of the base portion and the lid-forming portion.

9. (Rejected) A device according to claim 1, wherein the substance outlet passage is defined at least in part by an endpiece.

10. (Rejected) A device according to claim 9, wherein the endpiece projects from the reservoir.
11. (Rejected) A device according to claim 9, wherein the endpiece carries a sealing O-ring.
12. (Rejected) A device according to claim 1, wherein the reservoir is at least partially transparent.
13. (Rejected) A device according to claim 1, wherein the reservoir comprises a fastener arranged to co-operate by complementary shapes with the spray mechanism.
14. (Rejected) A device according to claim 1, wherein the substance is sprayed by suction created by a stream of vector gas.
15. (Rejected) A device according to claim 14, wherein the vector gas is stored in liquefied form in a pressurized receptacle.
16. (Rejected) A device according to claim 1, wherein the spray mechanism includes a control member arranged to act simultaneously both on a vector gas dispenser valve and on a valve for adjusting the flow rate of the sprayed substance.
17. (Rejected) A device according to claim 1, wherein the reservoir is generally elongate in shape, having a longitudinal axis substantially parallel to a direction in which spraying takes place.

18. (Objected To) A device according to claim 9, wherein the first partition extends inside the endpiece.

19. (Objected To) A device according to claim 1, wherein the first and second compartments are not in communication other than via the substance outlet passage.

20. (Rejected) A spray device comprising:

a spray mechanism comprising a housing for receiving a vector gas supply; and

a reservoir containing a substance to be sprayed and arranged in such a manner as to be capable of being releasably mounted on the device so that the substance can be selectively dispensed by the spray mechanism, the reservoir comprising:

a substance outlet passage; and

a closure member to close said passage when the reservoir is not mounted on the device, the spray mechanism and the closure member being arranged in such a manner that the closure member opens in response to the reservoir being mounted on the device.

21. (Rejected) A spray device for spraying at least one substance contained in a reservoir, the substance being taken from the reservoir by suction created at an outlet orifice of the reservoir by a stream of vector gas, the vector gas being stored in a pressurized receptacle, said device comprising an

adjustment valve for adjusting a flow rate of the sprayed substance and a control member capable of being operated by a user to act both on a vector gas dispenser valve and on the adjustment valve, the adjustment valve comprising a plunger arranged to co-operate with an associated seat so that the flow rate of the sprayed substance varies with varying spacing between the seat and the plunger, the dispenser valve being secured to the pressurized receptacle and being triggered by tilting a control rod, the substance comprising a cosmetic or a care product.

22. (Rejected) A device according to claim 21, wherein the control member comprises a pivoting lever.

23-24. (Canceled)

25. (Rejected) A device according to claim 21, wherein the seat is situated on a support piece for supporting at least one nozzle for spraying the substance.

26. (Rejected) A device according to claim 25, wherein the support piece is made of plastics material.

27. (Rejected) A device according to claim 26, wherein the support piece is releasably fastened on the device.

28. (Rejected) A device according to claim 21, wherein the substance reservoir is removable.

29. (Rejected) A device according to claim 21, further comprising two outlet nozzles for the vector gas and an outlet nozzle for the substance to be sprayed.

30. (Rejected) A device according to claim 25, wherein the at least one nozzle is made of metal.

31. (Rejected) A device according to claim 21, further comprising two vector gas outlet nozzles having axes that converge in a direction going away from the device.

32. (Rejected) A device according to claim 31, wherein the substance outlet orifice comprises an axis situated substantially in a same plane as the axes of the vector gas outlet nozzles.

33. (Rejected) A device according to claim 21, wherein the plunger is slidable in a direction substantially parallel to a direction along which the substance is sprayed.

34. (Rejected) A device according to claim 21, further comprising a housing for receiving the pressurized receptacle.

35. (Objected To) A device according to claim 34, further comprising a movable cap that enables access to the housing to be closed.

36. (Rejected) A device according to claim 21, further comprising a return spring for returning the plunger toward a rest position in which the plunger is pressed against the seat.

37. (Rejected) A device according to claim 21, wherein the control member does not include a return spring associated only with the control member.

38. (Rejected) A device according to claim 21, further comprising an endpiece arranged to be engaged on a control rod of the dispenser valve, wherein the control member is arranged to be capable of pressing against said endpiece.

39. (Objected To) A device according to claim 21, further comprising a hinged mirror.

40. (Rejected) A device according to claim 21, wherein the device is generally elongate in shape and the control member comprises a presser face placed on a longitudinal side of the device to be pressed by a user.

41. (Rejected) A device according to claim 21, wherein the reservoir of substance and the pressurized receptacle are held together in a fixed manner without movement relative to one another in use.

42. (Rejected) A device according to claim 21, wherein the reservoir includes a micro-orifice opening to the ambient atmosphere.

43. (Rejected) A device according to claim 1, wherein the substance comprises a cosmetic.

44. (Rejected) A device according to claim 1, wherein the substance comprises a care product.

45. (Rejected) A device according to claim 21, wherein the substance comprises a cosmetic.

46. (Rejected) A device according to claim 21, wherein the substance comprises a care product.

**XI. APPENDIX B - CLAIM SUPPORT
AND DRAWING ANALYSIS SECTION**

1. A spray device {paragraph [0068]; Figs. 1 and 2; element 1}
comprising:

a spray mechanism {paragraph [0068]; Figs. 1, 2; element 10};

and

a reservoir {paragraph [0068]; Figs. 5, 6; element 20} containing
a substance {paragraph [0101]; Fig. 5; element p} for spraying, arranged in
such a manner as to be capable of being removably mounted {paragraphs
[0068], [0091] and [0107]}; Figs. 5, 6 and 7; elements 24, 74 and 75} on the
device so that the substance can be selectively dispensed by the spray
mechanism {paragraphs [0082] and [0083]}, the reservoir comprising:

at least a first partition {paragraphs [0101] and [0105];
Figs. 5 and 6; elements 27 and/or 27a};

a substance outlet passage {Fig. 7; element 23b}, the
passage opening out at one end thereof on either side of said first partition
{paragraphs [0098] and [0105]; Figs. 5 and 6};

a closure member {paragraphs [0095]-[0098]; Figs. 5 and
8; elements 23, 25 and 26} for closing said passage when the reservoir is not
mounted on the device {paragraphs [0012] and [0097]; Fig. 8}, the spray
mechanism and the closure member being arranged in such a manner that the

closure member opens in response to the reservoir being mounted on the device **{Fig. 9}**; and

first and second compartments **{paragraphs [0102], [0103] and [0105]; Figs. 5 and 6; elements 20a and 20b}** capable of containing the substance, the compartments being arranged to feed the spray mechanism with the substance and being disposed on either side of said first partition **{paragraph [0105]; Figs. 5 and 6}**, wherein the substance comprises a cosmetic or a care product **{paragraph [0067]}**.

3. A device according to claim 1, wherein the closure member comprises a ball check valve **{paragraphs [0097] and [0098]; Figs. 5 and 7-9; elements 23a, 25 and 26}**.

4. A device according to claim 3, wherein the spray mechanism comprises a portion in relief **{paragraph [0098]; Figs. 8 and 9; element 73}** arranged, when the reservoir is mounted on the device, to move the ball from a first position **{paragraph [0097]; Fig. 8}** closing the passage to a second position **{paragraph [0098]; Fig. 9}** opening the passage.

20. A spray device **{paragraph [0068]; Figs. 1 and 2; element 1}** comprising:

a spray mechanism **{paragraph [0069]; Figs. 1 and 2; element 10}** comprising a housing **{paragraph [0072]; Figs. 1 and 2; element 11a}** for

receiving a vector gas supply {paragraphs [0070] and [0072]; Figs. 2 and 4; element 40}; and

a reservoir {paragraphs [0099]-[0107]; Figs. 1, 2, 5 and 6; element 20} containing a substance {paragraphs [0067], [0068] and [0101]; Fig. 6; element p} to be sprayed and arranged in such a manner as to be capable of being releasably mounted {paragraphs [0068] and [0107]; Figs. 5, 6 and 7; elements 24, 74 and 75} on the device so that the substance can be selectively dispensed by the spray mechanism {paragraphs [0082] and [0083]}, the reservoir comprising:

a substance outlet passage {paragraph [0098]; Figs. 4 and 5; element 23b}; and

a closure member to close said passage {paragraph [0098]; Figs. 5 and 8; elements 23, 25 and 26} when the reservoir is not mounted on the device, the spray mechanism and the closure member being arranged in such a manner that the closure member opens in response to the reservoir being mounted on the device {paragraph [0098]; Fig. 9}.

21. A spray device {paragraph [0068]; Figs. 1 and 2; element 1} for spraying at least one substance {paragraphs [0067], [0068] and [0101]; Fig. 6; element p} contained in a reservoir {paragraphs [0099]-[0107]; Figs. 1, 2, 5 and 6; element 20}, the substance being taken from the reservoir by suction created at an outlet orifice of the reservoir by a stream of vector gas

{paragraphs [0083] and [0098]; Figs. 7 and 3; elements 23b and 33b}, the vector gas being stored in a pressurized receptacle **{paragraph [0072]; Fig. 2, element 40}**, said device comprising

an adjustment valve **{paragraph [0080]; Figs. 2 and 3; elements 34g and 50}** for adjusting a flow rate of the sprayed substance **{paragraph [0028]}** and a control member **{paragraph [0071]; Fig. 2; element 12}** capable of being operated by a user to act both on a vector gas dispenser valve **{paragraph [0082]; Fig. 2; elements 14 and 41}** and on the adjustment valve **{paragraphs [0083] and [0027]; Fig. 2}**, the adjustment valve comprising a plunger **{paragraph [0076]; Fig. 3; element 50}** arranged to co-operate with an associated seat **{paragraph [0080]; Fig. 3; element 34g}** so that the flow rate of the sprayed substance varies with varying spacing between the seat and the plunger **{paragraphs [0041] and [0083]}**, the dispenser valve being secured to the pressurized receptacle **{paragraph [0030]}** and being triggered by tilting a control rod **{paragraphs [0088] and [0089]; Figs. 2 and 4; element 41}**, the substance comprising a cosmetic or a care product **{paragraphs [0012], [0067] and [0068]}**.

**XII. APPENDIX C - MEANS OR STEP PLUS
 FUNCTION ANALYSIS SECTION**

NONE

XIII. APPENDIX D - EVIDENCE SECTION

A copy of each of the following items of evidence relied on by the Appellant in this appeal is attached:

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/830,121	04/23/2004	Jacques Habatjou	119426	9007
25944 7590 08/19/2008 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850			EXAMINER BOECKMANN, JASON J	
			ART UNIT 3752	PAPER NUMBER
			MAIL DATE 08/19/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/830,121	Applicant(s) HABATJOU, JACQUES	
	Examiner Jason J. Boeckmann	Art Unit 3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 09 May 2008.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) 1-46 is/are pending in the application.

4a) Of the above claim(s) 8, 18, 19, 35 and 39 is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) 1-7, 9-17, 20-34, 36-38 and 40-46 is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 23 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☒ All b) ☐ Some * c) ☐ None of:

1. ☒ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. _____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ 5) <input type="checkbox"/> Notice of Informal Patent Application 6) <input type="checkbox"/> Other: _____
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DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 5-7, 9-17, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling (DE 3517122) in view of Rookard, Jr. (4,272,768).

Schilling shows a spray gun comprising: a spray mechanism (1), and a reservoir containing a substance for spraying, the reservoir is arranged to be removably mounted to the device, the reservoir comprising; a substance outlet passage (11, 7), a closure member (6) to close the passage when the reservoir is not mounted on the device. The closure member opens in response to the reservoir being mounted on the device (4), wherein the substance comprises a cosmetic or a care product (paint is both a cosmetic and a care product). Schilling does not specifically disclose that the reservoir comprises a first partition, first and second compartments capable of containing the substance, the compartments being arranged to feed the spray mechanism with the substance and being disposed on either side of the first partition,

However, Rookard, Jr. shows a reservoir comprising a first partition (6) defining first and second compartments (the right and left compartments shown in figure 1).

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to add the partition of Rookard, Jr.'s reservoir to the reservoir of Schilling in order to prevent uncontrollable sloshing which results in a stable reservoir even when partially full as taught by Rookard, Jr.(column 2, lines 39-41).

Regarding claims 2, 5 and 6, the partitions of Rookard, Jr. that are being added to Schilling's reservoir include a second partition (on the right side of figure 1) on one side of the first partition that defines two sub-compartments (top and bottom) that are in communication with each other, a third partition (on the left side of figure 1) located on the other side of the first partition defining two sub-compartments (top and bottom), the first partition being between the second and third partitions (figure 1).

Regarding claim 7, the reservoir of Shilling includes a base portion (30) and a lid-forming portion (19) fitted on the base portion (figure 1).

Regarding claims 9-11, the substance outlet passage (7, 11) is defined at least by an end piece (7) which projects from the reservoir (figure 1), the end piece including a sealing O-ring (12).

Regarding claim 13, the device of Shilling includes a fastener (5) arranged to cooperate by complementary shapes with the spray mechanism (1).

Regarding claim 12, Schilling as modified by Rookard, Jr. shows all aspects of the applicant's invention as in the rejection of claim 1 above, but does not specifically disclose that the reservoir is partially transparent. However, transparent reservoirs are common in the art. Therefore, it would have been obvious to one of ordinary skill in the

art at the time of the applicant's invention to make a portion of the reservoir transparent in order to see how much substance is left in the reservoir.

Regarding claim 14, the substance is sprayed in response to a suction created by a vector gas (inherently part of the spray gun in figure 1).

Regarding claim 16, the spray mechanism includes a control member to control the vector gas and the substance to be sprayed (figure 1).

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling (DE 3517122) in view of Rookard, Jr. (4,272,768) further in view of Coffee (4,306,685).

Schilling as modified by Rookard, Jr. shows all aspects of the applicant's invention as in the rejection of claim 1 above, but does not specifically disclose that the check valve is a ball check valve. However, Coffee shows a ball check valve (42) for a pressurized container. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to substitute the ball check valve of Coffee for the check valve of Schilling as modified by Rookard, Jr. in order to create a more uniform seal when the valve is closed.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schilling (DE 3517122), in view of Krautzberger (1,603,612).

Schilling shows a spray device comprising a spray mechanism (1) including a housing and a reservoir (3) containing a substance to be sprayed capable of being

releasably mounted to the device so that the substance can be selectively dispensed from the spray mechanism, the reservoir comprising a closure member (6) to close the passage when the reservoir is not mounted on the device, wherein, the closure member opens in response to the reservoir being mounted on the device (4), but does not specifically disclose that the housing has a vector gas supply.

However, Krautzberger shows a paint spray gun that includes a reservoir and housing for receiving a vector gas supply. The vector gas supply enters the device through element 6b and is used to propel the substance being sprayed.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to connect a vector gas supply to the housing of the device of Schilling, in order to propel the substance being sprayed for the reservoir to the article to be sprayed.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Krautzberger (1,603,612), in view of Schilling (DE 3517122).

Krautzberger shows a spray device comprising a spray mechanism (8) including a housing for receiving a vector gas supply (6b) and a reservoir (3) containing a substance to be sprayed capable of being releasably mounted to the device so that the substance can be selectively dispensed from the spray mechanism, but does not specifically disclose that the reservoir comprises a closure member to close the passage when the reservoir is not mounted on the device, wherein, the closure member opens in response to the reservoir being mounted on the device.

However, Schilling shows a spray device with a reservoir that includes a closure member (6) to close the passage when the reservoir is not mounted on the device, wherein, the closure member opens in response to the reservoir being mounted on the device (4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention add the closure member (6) of the reservoir of Schilling, to the reservoir of Krautzberger, in order to have the reservoir automatically seal when it is removed from the device to prevent leakage of the substance being sprayed.

Claims 21-34, 36-38, 40-42 45 and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krautzberger (1,603,612), in view of Bara (US 2003/0108487)

Krautzberger shows a spray device for spraying at least one substance contained in a reservoir (3), the substance being taken from the reservoir by suction created at an outlet orifice of the reservoir by a stream of vector gas coming from inlet 6b (lines 20-25), the device comprising an adjustment valve (5) for adjusting a flow rate of the sprayed substance and a control member (15) capable of being operated by a user to act both on a vector gas dispenser valve (20) and the adjustment valve (5), the adjustment valve comprising a plunger (5) arranged to co-operate with an associated seat (figure 1) so that the flow rate of the sprayed substance varies with the spacing between the seat and the plunger, the substance comprising a cosmetic or a care product (paint is both a cosmetic and a care product), but does not specifically disclose that the vector gas is stored in a pressurized receptacle.

However, Bara shows a device for spraying a product that includes a supply of vector gas that is contained in a receptacle (101), and used to draw a fluid from a second container by creating a vacuum just as in the device of Krautzberger.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to use the pressurized receptacle (101) of Bara's invention to carry the vector gas (or compressed air) of the device of Krautzberger, and have it be connected to the device at the air inlet 6b. This modification would allow the spray device to be portable and independent of an outside vector gas supply.

Regarding claims 22-24, the control member is a pivoting lever (figure 1) and the dispenser valve is secured to the pressurized receptacle and is triggered by tilting a control rod.

Regarding claims 25-27, the seat is situated on a support piece (8) for supporting the nozzle, and the support piece is releasably fastened to the device (figure 1).

Regarding claims 28 and 33, the reservoir is removable (figure 1) and the plunger is slidable in a direction parallel to the direction along which the substance is sprayed (figure 1).

Regarding claims 29-32, the device of Krautzberger, as modified by Bara above, shows all aspects of the applicant's invention as in the rejection of claim 21 above, but does not specifically disclose that the device comprises two outlet nozzles for the vector gas and an outlet for the substance, with the two vector gas outlet nozzles converging in

a direction going away from the device and the substance outlet orifice comprises an axis substantially in a same plane as the vector gas outlet nozzles.

However, Bara shows a spraying device comprising two outlet nozzles for the vector gas (7) and an outlet for the substance (6), with the two vector gas outlet nozzles converging in a direction going away from the device and the substance outlet orifice comprises an axis substantially in a same plane as the vector gas outlet nozzles (figures 1-4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to substitute the two vector gas nozzles (7) and the substance outlet (6) of Bara's spraying device for the nozzle configuration of the device of Krautzberger, as modified by Bara above, in order to suck the substance into the flow of the vector gas more efficiently due to having two nozzles of vector gas orientated towards each other, as well as to atomize the substance being sprayed.

Regarding claim 34, the device includes a housing (6b) for receiving the pressurized container as shown in figure 1.

Regarding claims 36 and 37, the device does not include a return spring for the plunger. However, it is well known in the art to use a return spring to return a valve needle back to a valve seat. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to add a return spring to the device in order to return the plunger back to its seat automatically.

Regarding claim 38, the device includes an end piece, (the linkage in the handle of the device in figure 1) arranged to be engaged on a control rod of the dispenser

valve, wherein the control member is arraigned to be capable of pressing against the end piece.

Regarding claims 40 and 41, the device is generally elongate in shape and the control member comprises a presser face on a longitude side of the device and the pressurized container and the reservoir are held together in a fixed manner (via the device housing).

Regarding claim 42, the device of Krautzberger, as modified by Bara above includes a micro-orifice opening to the ambient air when the reservoir is empty and the valve is slightly open.

Allowable Subject Matter

Claims 8, 18, 19, 35 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

Applicant's arguments filed 5/9/2008 have been fully considered but they are not persuasive.

In response to applicant's argument that Rookard is nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant

was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both the applicant's invention and Rookard's invention deal with reservoirs that contain multiple partitions that affect the flow of the fluid inside the reservoirs. Therefore, Rookard is being considered analogous art.

In response to applicant's argument that there is no suggestion to combine the references of Schilling and Rookard as applied to claim 1, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Rookard teaches partitions inside a reservoir to prevent uncontrollable sloshing, which is the motivation used in the 103 rejection of Schilling in view of Rookard above, to add the partitions to the reservoir of Schilling.

Regarding applicants remarks towards claim 20, applicant argues that Krautzberger does not disclose a housing for receiving a vector gas supply. The examiner respectfully disagrees. First off, it is noted that the tem "for receiving" is being considered a functional limitation and does not require an actual vector gas supply to be present in the housing. It is noted that the housing of Krautzberger is fully capable of receiving a vector gas supply and therefore meets the limitation of "for receiving a vector gas supply," of claim 20. A second interpretation of Krautzberger by the examiner

is that the pipe 6b, that is part of the housing of Krautzberger, connects to a source of compressed air, the source of compressed air being the vector gas supply. Therefore, the housing of Krautzberger receives a vector gas supply when it is connected to the source of compressed air. Depending on the type of compressed air supply that is used in conjunction with Krautzberger, the device of could very well be portable and cordless.

Regarding the applicant's arguments that paint is not a cosmetic or a care product, it is noted that by interpretation the claim language in view of the applicant's specification [0067] that the examiner agrees that paint cannot be considered a care product. However, the examiner is considering paint to be a cosmetic. American Heritage Dictionary defines cosmetic as: Something superficial that is used to cover a deficiency or defect. The examiner is considering the paint from the device of Schilling and Krautzberger to be a cosmetic due to the fact that paint is used to cover a deficiency or defect.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason J. Boeckmann whose telephone number is (571)272-2708. The examiner can normally be reached on 8:00- 5:00, Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571) 272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. J. B./
Examiner, Art Unit 3752
8/14/2008

Application/Control Number: 10/830,121
Art Unit: 3752

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/Len Tran/
Supervisory Patent Examiner, Art Unit 3752

PATENT APPLICATION

**RESPONSE UNDER 37 CFR §1.116
EXPEDITED PROCEDURE
TECHNOLOGY CENTER ART UNIT 3752**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Jacques HABATJOU

Group Art Unit: 3752

Application No.: 10/830,121

Examiner: J. BOECKMANN

Filed: April 23, 2004

Docket No.: 119426

For: A DEVICE FOR SPRAYING A SUBSTANCE, INCLUDING A REMOVABLE
RESERVOIR

AMENDMENT AFTER FINAL REJECTION UNDER 37 CFR §1.116

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In reply to the August 19, 2008 Office Action, and in consideration of the
concurrently filed Petition for Extension of Time, please consider the following:

Amendments to the Claims as reflected in the listing of claims; and

Remarks.

Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A spray device comprising:

a spray mechanism; and

a reservoir containing a substance for spraying, arranged in such a manner as to be capable of being removably mounted on the device so that the substance can be selectively dispensed by the spray mechanism, the reservoir comprising:

at least a first partition;

a substance outlet ~~passage;~~passage, the passage opening out at one end thereof on either side of said first partition;

a closure member for closing said passage when the reservoir is not mounted on the device, the spray mechanism and the closure member being arranged in such a manner that the closure member opens in response to the reservoir being mounted on the device; and

~~at least a first partition; and~~

first and second compartments capable of containing the substance, the compartments being arranged to feed the spray mechanism with the substance and being disposed on either side of said first partition, wherein the substance comprises a cosmetic or a care product.

2. (Canceled)

3. (Original) A device according to claim 1, wherein the closure member comprises a ball check valve.

4. (Original) A device according to claim 3, wherein the spray mechanism comprises a portion in relief arranged, when the reservoir is mounted on the device, to move the ball from a first position closing the passage to a second position opening the passage.

5. (Original) A device according to claim 1, wherein the reservoir comprises at least one second partition on one side of the first partition, the second partition being associated with the first compartment and defining therein two sub-compartments that are in communication with each other.

6. (Original) A device according to claim 5, wherein the reservoir comprises at least one third partition associated with the second compartment and defining therein two sub-compartments, the first partition being situated between the second and third partitions.

7. (Original) A device according to claim 1, wherein the reservoir comprises a base portion and a lid-forming portion fitted on the base portion.

8. (Original) A device according to claim 6, wherein the reservoir comprises a base portion and a lid-forming portion fitted on the base portion, and wherein the second and third partitions are made integrally with at least one of the base portion and the lid-forming portion.

9. (Original) A device according to claim 1, wherein the substance outlet passage is defined at least in part by an endpiece.

10. (Original) A device according to claim 9, wherein the endpiece projects from the reservoir.

11. (Original) A device according to claim 9, wherein the endpiece carries a sealing O-ring.

12. (Original) A device according to claim 1, wherein the reservoir is at least partially transparent.

13. (Original) A device according to claim 1, wherein the reservoir comprises a fastener arranged to co-operate by complementary shapes with the spray mechanism.

14. (Original) A device according to claim 1, wherein the substance is sprayed by suction created by a stream of vector gas.

15. (Original) A device according to claim 14, wherein the vector gas is stored in liquefied form in a pressurized receptacle.

16. (Original) A device according to claim 1, wherein the spray mechanism includes a control member arranged to act simultaneously both on a vector gas dispenser valve and on a valve for adjusting the flow rate of the sprayed substance.

17. (Original) A device according to claim 1, wherein the reservoir is generally elongate in shape, having a longitudinal axis substantially parallel to a direction in which spraying takes place.

18. (Original) A device according to claim 9, wherein the first partition extends inside the endpiece.

19. (Original) A device according to claim 1, wherein the first and second compartments are not in communication other than via the substance outlet passage.

20. (Original) A spray device comprising:
a spray mechanism comprising a housing for receiving a vector gas supply;
and

a reservoir containing a substance to be sprayed and arranged in such a manner as to be capable of being releasably mounted on the device so that the substance can be selectively dispensed by the spray mechanism, the reservoir comprising:

a substance outlet passage; and

a closure member to close said passage when the reservoir is not mounted on the device, the spray mechanism and the closure member being arranged in such

a manner that the closure member opens in response to the reservoir being mounted on the device.

21. (Currently Amended) A spray device for spraying at least one substance contained in a reservoir, the substance being taken from the reservoir by suction created at an outlet orifice of the reservoir by a stream of vector gas, the vector gas being stored in a pressurized receptacle, said device comprising an adjustment valve for adjusting a flow rate of the sprayed substance and a control member capable of being operated by a user to act both on a vector gas dispenser valve and on the adjustment valve, the adjustment valve comprising a plunger arranged to co-operate with an associated seat so that the flow rate of the sprayed substance varies with varying spacing between the seat and the plunger, the dispenser valve being secured to the pressurized receptacle and being triggered by tilting a control rod, the substance comprising a cosmetic or a care product.

22. (Original) A device according to claim 21, wherein the control member comprises a pivoting lever.

23-24. (Canceled)

25. (Original) A device according to claim 21, wherein the seat is situated on a support piece for supporting at least one nozzle for spraying the substance.

26. (Original) A device according to claim 25, wherein the support piece is made of plastics material.

27. (Original) A device according to claim 26, wherein the support piece is releasably fastened on the device.

28. (Original) A device according to claim 21, wherein the substance reservoir is removable.

29. (Original) A device according to claim 21, further comprising two outlet nozzles for the vector gas and an outlet nozzle for the substance to be sprayed.

30. (Original) A device according to claim 25, wherein the at least one nozzle is made of metal.

31. (Original) A device according to claim 21, further comprising two vector gas outlet nozzles having axes that converge in a direction going away from the device.

32. (Original) A device according to claim 31, wherein the substance outlet orifice comprises an axis situated substantially in a same plane as the axes of the vector gas outlet nozzles.

33. (Original) A device according to claim 21, wherein the plunger is slidable in a direction substantially parallel to a direction along which the substance is sprayed.

34. (Original) A device according to claim 21, further comprising a housing for receiving the pressurized receptacle.

35. (Original) A device according to claim 34, further comprising a movable cap that enables access to the housing to be closed.

36. (Original) A device according to claim 21, further comprising a return spring for returning the plunger toward a rest position in which the plunger is pressed against the seat.

37. (Original) A device according to claim 21, wherein the control member does not include a return spring associated only with the control member.

38. (Original) A device according to claim 21, further comprising an endpiece arranged to be engaged on a control rod of the dispenser valve, wherein the control member is arranged to be capable of pressing against said endpiece.

39. (Original) A device according to claim 21, further comprising a hinged mirror.

40. (Original) A device according to claim 21, wherein the device is generally elongate in shape and the control member comprises a presser face placed on a longitudinal side of the device to be pressed by a user.

41. (Original) A device according to claim 21, wherein the reservoir of substance and the pressurized receptacle are held together in a fixed manner without movement relative to one another in use.

42. (Original) A device according to claim 21, wherein the reservoir includes a micro-orifice opening to the ambient atmosphere.

43. (Original) A device according to claim 1, wherein the substance comprises a cosmetic.

44. (Original) A device according to claim 1, wherein the substance comprises a care product.

45. (Original) A device according to claim 21, wherein the substance comprises a cosmetic.

46. (Original) A device according to claim 21, wherein the substance comprises a care product.

REMARKS

Claims 1, 3-22 and 25-46 are pending in this application. Applicant appreciates the Office Action's indication that claims 8, 18, 19, 35 and 39 contain allowable subject matter (the Office Action incorrectly indicates that these claims stand withdrawn).

By this Amendment, claims 1 and 21 are amended. Claim 1 corresponds to claim 2, as originally filed. Claim 21 corresponds to claim 24, as originally filed. No new matter is added. Claims 2, 23 and 24 are canceled without prejudice to, or disclaimer of, the subject matter recited in those claims. Reconsideration of the application based on the above amendments and the following remarks is respectfully requested.

Entry of the amendments is proper under 37 CFR §1.116 because the amendments: (a) place the application in condition for allowance (for the reasons discussed herein); (b) do not raise any new issue requiring further search and/or consideration as the amendments simply incorporate subject matter from dependent claims into independent claims; and (c) place the application in better form for appeal, should an appeal be necessary. Entry of the amendments is thus respectfully requested.

I. The Rejections of Claims 1-4, 5-7, 9-17, 43 and 44

The Office Action rejects claims 1, 2, 5-7, 9-17, 43 and 44 under 35 U.S.C. §103(a) over DE 3517122 to Schillig in view of U.S. Patent No. 4,272,768 to Rookard Jr. (hereinafter "Rookard"); and rejects claims 3 and 4 under 35 U.S.C. §103(a) over Schillig in view of Rookard, and further in view of U.S. Patent No. 4,306,685 to Coffee. These rejections are respectfully traversed.

Claim 1 recites, among other features, "a substance outlet passage, the passage opening out at one end thereof on either side of said first partition."

The Office Action asserts that Rookard teaches the above-quoted feature, and that it would have been obvious to modify the reservoir of Schillig with the reservoir of Rookard. However, such an analysis fails for the at least following reasons.

Schillig, in Fig. 1, teaches the use of a spiked tube 4 to physically puncture and insert into cup 3. Adding the canister of Rookard, which contains metal baffles 6 at the neck of the canister in Fig. 6, would render Schillig unsatisfactory for its intended purpose because the spiked tube 4 is being inserted into a neck region partially blocked by baffles 6. The Office Action construes Rookard to teach the neck on either side of the metal baffles 6 (i.e., the baffles extend into the neck area). Without substantial redesign, the spike could forcefully contact the baffles in the neck area where the liquid in the cup 3 exits, causing damage to either the closure member 6, cup 3, or the spiked tube 4.

Claim 3 recites, among other features, "wherein the closure member comprises a ball check valve." Claim 4 recites, among other features, "wherein the spray mechanism comprises a portion in relief arranged, when the reservoir is mounted on the device, to move the ball from a first position closing the passage to a second position opening the passage."

The Office Action asserts Coffee for the above-recited features, and that it is obvious to modify Schillig with the features of Coffee. However, such an analysis fails for at least the following reasons.

Schillig, Fig. 2, uses "Radialdichtring" ("seal") 12 to create a seal around the spiked tube 4 by forcing material to be in contact with the spiked tube 4 when inserted into the cup 3. Schillig, in Fig. 2, teaches side entry holes 20 for the liquid in the cup 3 to enter the spiked tube 4 and enter the spray device 1. To replace the seal 12 of Schillig with a ball-valve of Coffee in Fig. 7 at the top of the spiked tube 4 would cause the liquid in the cup 3 not to enter the side entry holes 20, changing the principle of operation of Schillig. Further, such a modification would cause the liquid in the cup to leak down the sides of the spiked tube 4

onto the user's hands and the spray device 1. This leakage clearly would render Schillig unsatisfactory for its intended purpose of working as a spray device 1 with liquid storage in cup 3.

Further, such a modification would cause the delicate valve mechanisms of Coffee to be damaged when forcefully coming into contact with the spiked tube of Schillig, rendering Schillig unsatisfactory for its intended purpose. Schillig would have to be substantially reengineered to replace the spiked tube with the finger 47 of Coffee, which is designed to come into contact with the ball. However, such a finger would not forcefully pierce through the bottom of cup 3. Therefore, this modification would render Schillig unsatisfactory for its intended purpose of piercing into the bottom of the cup 3.

Therefore, one of ordinary skill would not have had any reason to try and combine Schillig with Rookard or with Rookard in view of Coffee. Accordingly, reconsideration and withdrawal of the §103(a) rejections of claims 1, 3-7, 9-17, 43 and 44 are respectfully requested.

II. The Rejection of Claims 20-34, 36-38, 40-42, 45 and 46

The Office Action rejects claim 20 under 35 U.S.C. §103(a) over Shillig in view of U.S. Patent No. 1,603,612 to Krautzberger; rejects claim 20 under 35 U.S.C. §103(a) over Krautzberger in view of Shillig; and rejects claims 21-34, 36-38, 40-42, 45 and 46 under 35 U.S.C. §103(a) over Krautzberger in view of U.S. Patent Application Publication No. 2003/0108487 to Bara. These rejections are respectfully traversed.

Regarding claim 20, the Office Action applies Krautzberger in combination with Schillig in asserting obviousness of this claim. In the alternative, the Office Action newly applies Schillig in combination with Krautzberger in asserting obviousness of this claim. The Office Action concedes that Schillig does not disclose a housing for receiving a vector gas supply. The Office Action relies on Krautzberger as allegedly disclosing these features.

However, Krautzberger only discloses a pipe 6B through which compressed air enters. Pipe 6B is apparently described as "attached on the lower side." As discussed in the May 9, 2008 Amendment, these features cannot reasonably be considered to correspond to a housing for receiving a vector gas supply.

Moreover, the construction of the Office Action does not comport with the ordinary and customary meanings of the claim terms. A "housing for receiving the vector gas supply" is sufficiently clear to be understood, as used in the context of the pending claims, as the housing at least partially containing the vector gas supply (see Applicant's specification at, for example, paras. [0048], [0054], [0069], [0072]; Fig. 2, Ref. No. 11a). As described in Applicant's specification, providing "a housing for receiving the vector gas supply" may contribute to the benefits of making the device portable and cordless (see para. [0048]). When "A is received by B", one of ordinary skill in the art would understand this configuration to mean that A is at least partially contained by B. Therefore, the vector gas supply can be at least partially internal to the housing. The Office Action, at page 10, asserts that Krautzberger is fully capable of receiving a vector gas supply. Pipe 6B of Krautzberger is too small to be a "housing for receiving the vector gas supply." A housing that is too small would not provide enough vector gas for practical use of the device. Therefore, Krautzberger is not fully capable of receiving a vector gas supply.

Regarding claim 21, claim 21 is amended to recite additional features, as outlined above. In particular, claim 21 recites, among other features, "the dispenser valve being secured to the pressurized receptacle and being triggered by tilting a control rod." The Office Action asserts that it would have been obvious to try to combine Bara with Krautzberger for the above-quoted features. One of ordinary skill in the art would not have had any reason to combine Krautzberger and Bara to render obvious the subject matter of claim 21, as amended, and even if in hindsight having done so, would not have achieved the claimed invention.

The embodiment of Figs. 12-15 of Bara comprises a dispenser valve secured to a pressurized receptacle that releases a vector gas as a user actuates pushbutton 1103. This dispenser valve cannot reasonably be considered to have a tilting rod. Specifically, upon actuation, rod 1120 is confined to translating up and down relative to the receptacle 1104. Thus, in this configuration, a tilting of rod 1120 is not possible. Combining this embodiment of Bara with Krautzberger would yield a device that does not operate according to the specific language of the above-quoted feature recited in claim 21.

Alternatively, the embodiment of Figs. 6, 7 and 8 of Bara comprises a dispenser valve secured to a pressurized receptacle that releases a vector gas as a user actuates push button 135. If push button 135 is assumed to correspond to a control rod, it would have been impractical to keep this push button 135 "capable of being operating by a user" and combine it with an adjustment valve. Therefore, it would not have been obvious to combine this embodiment of Bara with Krautzberger or to achieve the claimed combination.

Therefore, if Bara is asserted to teach a tilting rod, such a tilting rod can only be in relation to different embodiments that do not have an adjustment valve. Thus, Krautzberger and Bara would not be operable as combined. For these reasons, a person of ordinary skill in the art at the time of filing this application would not have had any reason to combine Krautzberger with Bara.

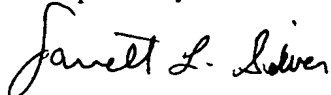
For at least the above reasons, the applied references are not combinable in the manner suggested, and no permissible combination of the applied references can reasonably be considered to have suggested the combinations of features positively recited in claims 20 and 21. Additionally, claims 22 and 25-34, 36-38, 40-42, 45 and 46 would also not have been reasonably rendered obvious by the applied references for at least the respective dependence of these claims, directly or indirectly, on an allowable base claim, as well as for the separately patentable subject matter that each of these claims recites.

Accordingly, reconsideration and withdrawal of the §103(a) rejections of claims 20, 21, 25-34, 36-38, 40-42, 45 and 46 are respectfully requested.

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 3-22 and 25-46 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



William P. Berridge
Registration No. 30,024

Jarrett L. Silver
Registration No. 60,239

WPB:JZS/jzs

Attachment:
Petition for Extension of Time

Date: January 21, 2009

OLIFF & BERRIDGE, PLC
P.O. Box 320850
Alexandria, Virginia 22320-4850
Telephone: (703) 836-6400

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/830,121	04/23/2004	Jacques Habatjou	119426	9007
25944 7590 02/02/2009 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850			EXAMINER BOECKMANN, JASON J	
			ART UNIT 3752	PAPER NUMBER
			MAIL DATE 02/02/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Interview Summary	Application No.		Applicant(s)	
	10/830,121		HABATJOU, JACQUES	
	Examiner		Art Unit	
	Jason J. Boeckmann		3752	

All participants (applicant, applicant's representative, PTO personnel):

(1) Jason J. Boeckmann. (3) _____.

(2) Jared Silver. (4) _____.

Date of Interview: 28 January 2009.

Type: a) ☐ Telephonic b) ☐ Video Conference
c) ☒ Personal [copy given to: 1) ☐ applicant 2) ☒ applicant's representative]

Exhibit shown or demonstration conducted: d) ☐ Yes e) ☒ No.
If Yes, brief description: _____.

Claim(s) discussed: 1,3,4,20 and 21.

Identification of prior art discussed: Krautzberger (1,603,612), Coffee (4,309,685), Schillig (DE 35 17122), Bara (US 2003/0108487) and Rookard (4,272,768).

Agreement with respect to the claims f) ☐ was reached. g) ☒ was not reached. h) ☐ N/A.

Substance of Interview including description of the general nature of what was agreed to if an agreement was reached, or any other comments: The after final amendment was discussed in vie of the references. Regarding claim 20 we discussed the meaning of "receiving a vector gas supply." Regarding claim 1 we discussed the inoperability of the valve member of Schillig in view of Coffee and Rookard. Regarding claim 21, the control road being secured to the pressurized receptacle.

(A fuller description, if necessary, and a copy of the amendments which the examiner agreed would render the claims allowable, if available, must be attached. Also, where no copy of the amendments that would render the claims allowable is available, a summary thereof must be attached.)

THE FORMAL WRITTEN REPLY TO THE LAST OFFICE ACTION MUST INCLUDE THE SUBSTANCE OF THE INTERVIEW. (See MPEP Section 713.04). If a reply to the last Office action has already been filed, APPLICANT IS GIVEN A NON-EXTENDABLE PERIOD OF THE LONGER OF ONE MONTH OR THIRTY DAYS FROM THIS INTERVIEW DATE, OR THE MAILING DATE OF THIS INTERVIEW SUMMARY FORM, WHICHEVER IS LATER, TO FILE A STATEMENT OF THE SUBSTANCE OF THE INTERVIEW. See Summary of Record of Interview requirements on reverse side or on attached sheet.

/J. J. B./ Examiner, Art Unit 3752	/Len Tran/ Supervisory Patent Examiner, Art Unit 3752
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PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Jacques HABATJOU

Group Art Unit: 3752

Application No.: 10/830,121

Examiner: J. BOECKMANN

Filed: April 23, 2004

Docket No.: 119426

For: A DEVICE FOR SPRAYING A SUBSTANCE, INCLUDING A REMOVABLE
RESERVOIR

STATEMENT OF SUBSTANCE OF INTERVIEW

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The courtesies extended to Applicant's representative by Examiner Boeckmann at the interview held January 28, 2009 are appreciated. The reasons presented at the interview as warranting favorable action are incorporated into the remarks below, which constitute Applicant's record of the interview.

Applicant's representative discussed that the combination of Schillig with Rookard or Schillig with Coffee does not disclose or render obvious the subject matter recited in claims 1, 3 and 4. The Derwent English abstract of Schillig indicates "the hand held paint spray gun which uses a canister as its paint source, has a spiked tube (4) on top, which is used to pierce the bottom of the canister (3)." Applicant's representative argued, based on the Derwent English abstract and Figures of Schillig, that the principal method of operation of Schillig is to pierce the canister. One of ordinary skill in the art would understand piercing a canister with a spiked tube as the forceful insertion of the spiked tube into the canister.

In particular, claim 1 recites, among other features, "a substance outlet passage, the passage opening out at one end thereof on either side of said first partition." As such, "the passage opening out at one end thereof on either side of said first partition" indicates that the at least a portion of the sides of the first partition are inside the "substance outlet passage." On the other hand, piercing a canister containing the alleged "partition" of Rookard in the alleged "substance outlet passage" of Schillig would have a high probability of forcefully damaging the spiked tube, partitions, or canister at the time of insertion. Therefore, this modification would render Schillig unsatisfactory for its intended purpose of piercing the bottom of the canister 3.

The Examiner raised the possibility of construing the "substance outlet passage" to include the central areas of the reservoir that are used for containing a substance. However, it is contrary to the understanding of one of ordinary skill in the art to assert that the "substance outlet passage" includes the central areas of the reservoir that are used for containing a substance.

Claim 3 recites, among other features, "wherein the closure member comprises a ball check valve." Claim 4 recites, among other features, "wherein the spray mechanism comprises a portion in relief arranged, when the reservoir is mounted on the device, to move the ball from a first position closing the passage to a second position opening the passage." As discussed in the interview, it would not have been obvious to try to modify Schillig with Coffee in the manner asserted.

The Derwent Abstract of Schillig indicates "the canister incorporates a self-operating relief valve in its surface." The Examiner questioned whether replacing the "self-operating relief valve" and spiked tube of Schillig with the ball check valve and finger of Coffee would have been an obvious modification. However, because the finger is designed with a flat or a concave end for contacting the ball of the ball valve, the finger does not have a "spike" and

would not be suitable for piercing a canister. Therefore, such a modification would change the principal method of operation of Schillig.

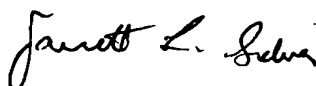
Regarding claim 20, Applicant's representative argued that Schillig in view of Krautzberger or Krautzberger in view of Schillig does not render obvious "a housing for receiving a vector gas supply," as recited in claim 20. The ordinary meaning of the term "supply" in "vector gas supply" indicates a source of vector gas. There are no features in Krautzberger or Schillig that can reasonably be considered to correspond to, or render obvious, "a housing for receiving a vector gas supply."

Claim 21 recites, among other features, "the dispenser valve being secured to the pressurized receptacle and being triggered by tilting a control rod." Applicant's representative argued that Krautzberger does not teach, or render obvious, any features that can reasonably correspond to the above-quoted feature, because air valve 20 of Krautzberger (alleged "dispenser valve") cannot be considered to be "secured to the pressurized receptacle" of Bara. The Examiner noted that air valve 20 is secured to the paint gun. However, being secured to the paint gun does not correspond to "being secured to a pressurized receptacle and being triggered by tilting a control rod."

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1, 3-22 and 25-46 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



William P. Berridge
Registration No. 30,024

Jarrett L. Silver
Registration No. 60,239

WPB:JZS/jzs

Date: February 6, 2009

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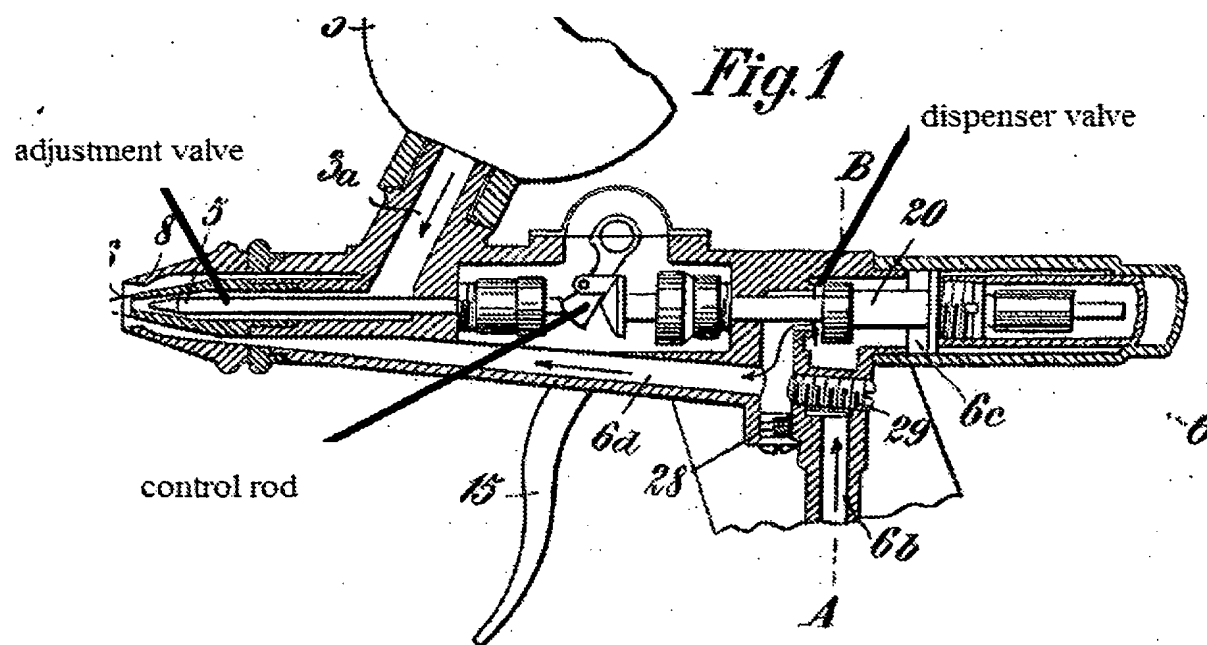
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/830,121	04/23/2004	Jacques Habatjou	119426	9007
25944 7590 02/10/2009 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850			EXAMINER BOECKMANN, JASON J	
			ART UNIT 3752	PAPER NUMBER
			MAIL DATE 02/10/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.



EXAMINER'S MARKED UP FIGURE

Advisory Action Before the Filing of an Appeal Brief	Application No. 10/830,121	Applicant(s) HABATJOU, JACQUES	
	Examiner Jason J. Boeckmann	Art Unit 3752	

– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

THE REPLY FILED 21 January 2009 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.

b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because

(a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);

(b) ☐ They raise the issue of new matter (see NOTE below);

(c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or

(d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).

5. ☐ Applicant's reply has overcome the following rejection(s): _____.

6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).

7. ☒ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: _____.

Claim(s) objected to: 8, 18, 19, 35 and 39.

Claim(s) rejected: 1, 3-7, 9-17, 20-22, 25-34, 36-38 and 40-46.

Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).

9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).

10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:
See Continuation Sheet.

12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08) Paper No(s). _____

13. ☐ Other: _____.

/Len Tran/
Supervisory Patent Examiner, Art Unit 3752

/J. J. B./
Examiner, Art Unit 3752

Continuation of 11. does NOT place the application in condition for allowance because: See the final rejection of 8/19/2008.

Regarding the applicant's rejections of claims 1-4, 5-7, 9-17, 43 and 44, the applicant argues the combination of the device of Schillig with the device of Rookard. However, it is noted that the examiner respectfully disagrees. For example, the applicant argues that the spike tube 4 will interfere with the baffles of Rookard and therefore destroy the function of the combination. However, as shown in figure 2, the spiked tube 4 does not penetrate into the container itself, it merely stays inside the valve (6) and is complete surrounded by member 17. How can the spike member interfere with the baffles of Rookard if the spike tube is completely surrounded by member 17 when the container (3) connected to the gun (1). The 103 rejection of the final office action merely adds baffles of Rookard to the inside of the container (3) of Schillig, in order to prevent sloshing. Regarding the addition of the Coffee reference to substitute the flat disk shaped valve (14) of Schillig for the ball valve of Coffee, it is noted that the flat disk valve (14) is moved from a closed position to an open position, when the container (3) is on the gun (1), by member 4 and biased to a closed position by member 15, when the container is removed from the gun. The ball valve of Coffee works in a similar manor. In Coffee the ball valve is opened by member 47 when the container is on the gun, and closed by member 44 when the container is removed from the gun. The rejection for claim 3 simply replaces the disk valve (14) of Schillig, with the ball valve (42) of Coffee, leaving everything else of Schillig in tact.

Regarding the applicant's rejections of claim 20, the applicant argues that the Krautzberger reference is not capable of receiving a vector gas supply. However, it is noted that the examiner respectfully disagrees. The claim language states "a housing for receiving a vector gas supply," and it is noted that the device of Krautzberger receives its vector gas supply via tube 6b (line 30). The compressed air is being considered the vector gas supply and when the compressed air is inside the housing of the gun, the gun has received the compressed air. Therefore, when the compressed air enters the housing, the housing has received the vector gas supply. Nowhere does the claim state that the vector gas supply must be inside the housing. The gun is connected to a vector gas supply and therefore it receives the vector gas supply.

Regarding the applicant's rejections of claim 21-34, 36-38, 40-42, 45 and 46, the applicant argues that the combination of Krautzberger and Bara does not show a "dispenser valve being secured to the pressurized receptacle and being triggered by tilting a control rod." However, the examiner respectfully disagrees. The examiner is considering the element, shown in the examiner's marked up figure attached, to be the control rod which is tilted to move the valve member 20 when the trigger 15 is pulled. When the control rod is tilted, the dispensing valve opens as well as the adjustment valve. It is also noted that since the pressurized receptacle of Bara is secured to the spray gun, and the dispensing valve is part of the spray gun, then the dispensing valve is therefore also secured to the pressurized receptacle.

19 BUNDESREPUBLIK
DEUTSCHLAND



DEUTSCHES
PATENTAMT

12 Patentschrift
11 DE 35 17 122 C 1

61 Int. Cl. 4:
B 05 B 7/24

21 Aktenzeichen: P 35 17 122.7-53
22 Anmeldetag: 11. 5. 85
43 Offenlegungstag: —
45 Veröffentlichungstag
der Patenterteilung: 28. 5. 86

Behördeneigenthum

DE 35 17 122 C 1

Innerhalb von 3 Monaten nach Veröffentlichung der Erteilung kann Einspruch erhoben werden

73 Patentinhaber:
Daimler-Benz AG, 7000 Stuttgart, DE

72 Erfinder:
Schilling, Rolf, 2800 Bremen, DE

56 Im Prüfungsverfahren entgegengehaltene
Druckschriften nach § 44 PatG:
NICHTS-ERMITTELT

54 Korb- oder becherförmige Aufnahmevorrichtung für Farbbehälter an Farbspritzpistolen

Die Erfindung betrifft eine korb- oder becherförmige Aufnahmevorrichtung für Farbbehälter an Farbspritzpistolen. Zum Lackieren kleinerer Flächen, wie etwa von Türen oder Kotflügeln an Kraftfahrzeugen, finden Farbspritzpistolen Verwendung, die mit einer korb- oder becherförmigen Aufnahmevorrichtung für Farbbehälter versehen sind. Diese Farbbehälter stehen über einen ihren Boden durchdringenden Kanal fluidisch mit der Sprühdüse der Farbspritzpistole in Verbindung. Um bei einem Wechsel der Lackfarbe die zu reinigenden farbbeetzten Flächen möglichst gering zu halten, sieht die Erfindung vor, daß die Aufnahmevorrichtung einen in Aufnahme-richtung des Farbbehälters sich erstreckenden, vorzugsweise kegelförmigen, hohlen, oder als Hohl-nadel oder dergleichen ausgebildeten Zapfen aufweist, auf den der Farbbehälter flüssigkeitsdicht aufsteckbar ist.

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DE 35 17 122 C 1

Patentansprüche:

1. Korb- oder becherförmige Aufnahmevorrichtung für Farbbehälter an Farbspritzpistolen, welche den Farbbehälter lagedefiniert und kippsicher aufnimmt, wobei das Innere des Farbbehälters über einen den Boden des Farbbehälters durchdringenden Kanal fluidisch mit der Sprühdüse der Farbspritzpistole in Verbindung steht, dadurch gekennzeichnet, daß die Aufnahmevorrichtung (2) einen in Aufnahmerrichtung des Farbbehälters (3) sich erstreckenden, vorzugsweise kegelförmigen, hohlen, oder als Hohnädel- oder dergleichen ausgebildeten Zapfdorn (4) aufweist, auf den der Farbbehälter (3) flüssigkeitsdicht aufsteckbar ist.

2. Aufnahmevorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß im Inneren des aufgesteckten Farbbehälters (3) wenigstens eine bis in die Aushöhlung (11) des Zapfdorns (4) vorstoßende Querbohrung (20) am Zapfdorn (4) angebracht ist.

3. Aufnahmevorrichtung nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß der den Boden (8) des Farbbehälters (3) durchstoßende Zapfdorn (4) exzentrisch in der korb- oder becherförmigen Aufnahmevorrichtung (2) angeordnet ist.

4. Aufnahmevorrichtung nach Anspruch 3, dadurch gekennzeichnet, daß der Boden (8) des Farbbehälters (3) gegenüber der Sprühachse zum Zapfdorn (4) hin geneigt ist.

5. Aufnahmevorrichtung nach Anspruch 3 oder 4, dadurch gekennzeichnet, daß die Aufnahmevorrichtung (2) um die Achse des Zapfdorns (4) oder um eine rechtwinklig zur Sprühachse verlaufende Achse drehbar ist.

6. Aufnahmevorrichtung nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, daß am oberen Ende der Aufnahmevorrichtung (2) eine schwergängig wegschwenkbare Sperre (5) für den Farbbehälter (3) vorgesehen ist, die den Farbbehälter (3) übergreift.

7. Aufnahmevorrichtung nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, daß der Farbbehälter (3) als ein Einwegbecher ausgebildet ist.

8. Aufnahmevorrichtung nach einem der Ansprüche 1 bis 6, dadurch gekennzeichnet, daß der Farbbehälter (3) als ein mehrfach verwendbarer und mit einem Deckel luftdicht verschließbarer Becher ausgebildet ist, der ein das Einsteckloch des Zapfdorns (4) beim Abziehen des Farbbehälters (3) selbsttätig verschließendes, mittelfreies Ventil (6) aufweist.

Die Erfindung betrifft eine korb- oder becherförmige Aufnahmevorrichtung für Farbbehälter an Farbspritzpistolen nach dem Oberbegriff des Hauptanspruches, wie sie aus der CH-PS 1 44 080 als bekannt hervorgeht.

Zum Lackieren kleinerer Flächen, wie etwa von Türen oder Kotflügeln an Kraftfahrzeugen, finden Farbspritzpistolen Verwendung, die mit einem mit der jeweils notwendigen Menge Farbe gefüllten Farbbehälter versehen sind. Um einen raschen Wechsel der Lackfarbe zu ermöglichen, ohne den Farbbehälter mit Resten der alten Farbe erst entleeren, reinigen und mit Lack in der neuen Farbe füllen zu müssen, wird in der

CH-PS 1 44 080 vorgeschlagen, an die Farbspritzpistole eine Aufnahmevorrichtung für Farbbehälter zu deren schnellen Wechsel anzubringen. Hierbei ist der Farbbehälter in seiner Bodenmitte mit einem federbeaufschlagten Ventil versehen, das sich beim Einsetzen des Farbbehälters in die Aufnahmevorrichtung selbsttätig öffnet. Durch einen bajonettartigen Verschluss wird der Farbbehälter in der Aufnahmevorrichtung arretiert und das Ventil in Offenstellung gehalten. Die Farbe fließt durch das geöffnete Ventil in einen muldenförmigen Untersatz der Aufnahmevorrichtung und von dort über eine seitlich vom oberen Randbereich des muldenförmigen Untersatzes ausgehende Rohrverbindung in die Farbspritzpistole. Die Farbe gelangt also erst dann in die Farbspritzpistole, wenn sich der muldenförmige Untersatz bis zur Höhe des Abganges der Rohrverbindung mit Farbe angefüllt hat.

Bei einem Wechsel der Lackfarbe erweist es sich nun als nachteilig, daß vor dem Einsetzen des neuen Farbbehälters zusätzlich zu den in der Farbzuleitung bis zur Sprühdüse befindlichen Farbresten auch noch der in dem muldenförmigen Untersatz befindliche Rest an alter Farbe ausgewaschen und das Lösungsmittel/Farbgemisch ausgespritzt werden muß.

Aufgabe der Erfindung ist es, eine Aufnahmevorrichtung für Farbbehälter an Farbspritzpistolen zu schaffen, bei der die bei einem Wechsel der Lackfarbe zu reinigenden farbbenetzten Flächen und somit die Farbverluste, der Lösungsmittelverbrauch, der Zeitaufwand für die Reinigung und die Lösungsmittellemission möglichst gering sind.

Erfindungsgemäß wird diese Aufgabe durch die kennzeichnenden Merkmale des Hauptanspruches gelöst. Neben der mit der Sprühdüse in Verbindung stehenden Farbzuleitung muß bei einem Wechsel der Lackfarbe nur noch die farbbenetzte Außenmantelfläche des Zapfdorns von Farbresten gereinigt werden, wobei die am Zapfdorn anhaftende Farbe beim Herausziehen des Farbbehälters aus dem Zapfdorn ohnehin großteils von der Einstecköffnung abgestreift wird.

Zweckmäßige Ausgestaltungen der Erfindung sehen vor, daß als Farbbehälter entweder Einwegbecher oder aber mehrfach verwendbare, mit einem Deckel luftdicht verschließbare und mit einem selbsttätig schließenden, mittelfreien Ventil versehene Becher verwendet werden können.

Die Verwendung von Einwegbechern hat den Vorteil, daß deren Herstellung, beispielsweise aus flüssigkeitsdichter Pappé oder aus einem polymeren Werkstoff, preiswert und ein Wechsel der Lackfarbe in einfacher Weise möglich ist. Nach Beendigung des Lackiervorganges wird der Einwegbecher entleert oder leerespritzt, vom Zapfdorn abgezogen und weggeworfen. Daran anschließend wird der farbbenetzte Zapfdorn mit einem Lappen und mit Reinigungsmittel von Farbresten gesäubert, so wie auch die farbführenden Kanäle der Spritzpistole durch Aufsetzen eines Reinigungsmittel enthaltenden Farbbehälters und anschließendes Sprühen gereinigt werden. Nach dessen Abziehen kann nun der die neue Farbe enthaltende Farbbehälter in die Aufnahmevorrichtung eingesetzt werden. Einwegbecher könnten mit unterschiedlichen Füllmengen von der Zulieferindustrie bezogen werden, wodurch auch das verbraucherseitige Abfüllen der Becher mit Farbe entfallen würde. Bei Verwendung von Zwei-Komponenten-Lacken wäre es denkbar, daß Stammelack und Härter — durch Folie voneinander getrennt — gemeinsam in einem einzigen Becher lieferbar wären, wobei das Vermi-

schen der beiden Komponenten erst bei Bedarf vom Endverbraucher vorgenommen würde. Hierdurch wäre ein weiterer Zeitvorteil erzielbar.

Mehrfach verwendbare Becher sind gegenüber Einwegbechern von der Herstellung her teurer, — insbesondere wegen des notwendigen Einbaus eines Ventils. Ihre höheren Herstellungskosten amortisieren sich jedoch schon bald bei fortwährendem Gebrauch. Nach Benutzung werden sie wieder mit der gleichen Farbe aufgefüllt, mit einem Deckel luftdicht verschlossen, und bis zum nächsten Einsatz gelagert. Für jede Lackfarbe ist also wenigstens ein mehrfach verwendbarer Becher vorzusehen. Gleichzeitig fällt jedoch kein Abfall von leeren Bechern oder von Farbstoffen bei nur teilweise leerespritzten Bechern und den damit verbundenen Emissionsproblemen an. Bezüglich der laufenden Kosten und dem Entsorgungsproblem weisen mehrfach verwendbare Becher also gewichtige Vorteile auf.

Weitere zweckmäßige Ausgestaltungen der Erfindung können den Unteransprüchen entnommen werden. Im übrigen wird die Erfindung anhand zweier, in den Zeichnungen dargestellter Ausführungsbeispiele noch näher erläutert. Dabei zeigt

Fig. 1 eine mit einer Aufnahmevorrichtung versehene Farbspritzpistole beim Aufsetzen des Farbbehälters und

Fig. 2 eine drehbare Aufnahmevorrichtung mit einem mehrfach verwendbaren Farbbehälter in teilweise geschnittener Seitenansicht.

In Fig. 1 ist eine Farbspritzpistole 1 dargestellt, auf die eine korbformige Aufnahmevorrichtung 2 für den als Einwegbecher ausgebildeten Farbbehälter 3 aufgeschraubt ist. Ein in Aufsteckrichtung des Farbbehälters 3 weisender, kegelförmiger Zapfdorn 4 ist exzentrisch in der Aufnahmevorrichtung 2 angeordnet, wobei der Boden der Aufnahmevorrichtung 2 zum Zapfdorn 4 hin geneigt ist. Am oberen Ende der Aufnahmevorrichtung 2 ist ein schwergängig wegschwenkbarer Ring 5 angebracht.

Beim Einsetzen des Farbbehälters 3 in die Aufnahmevorrichtung 2 wird der Becherboden von dem kegelförmigen Zapfdorn 4 durchstoßen, wobei die dabei entstehende, kreisförmige Einstecköffnung flüssigkeitsdicht am Zapfdorn 4 anliegt. Die Aufnahmevorrichtung 2 hält den Farbbehälter 3 kippsicher in definierter Lage. Durch die zum exzentrischen Zapfdorn 4 hin geneigte Anordnung der Aufnahmevorrichtung 2 sammelt sich die Farbe bereits bei waagerechter Haltung der Spritzpistole 1 im Bereich des Zapfdorns 4, wodurch der Inhalt an Farbe in hohem Maße verwertbar wird. Dieser Vorteil läßt sich — allerdings nur bei entsprechend geneigter Spritzpistole 1 — auch ohne den zum Zapfdorn 4 hin geneigten Farbbehälter 3 allein durch die exzentrische Anordnung des Zapfdorns 4 erzielen. Der Ring 5, an dem die Farbspritzpistole 1 bei Nichtgebrauch aufgehängt werden kann, ist über den zumeist mit einem Deckel versehenen Farbbehälter 3 wegschwenkbar und sichert ihn gegen Herausfallen.

Fig. 2 zeigt eine Aufnahmevorrichtung 2 mit einem mehrfach verwendbaren Farbbehälter 3. Ein Ventil 6 ist mit seinem Fußteil 7 in den zu ihm hin geneigten Boden 8 des Farbbehälters 3 eingeschraubt und mit einer Dichtung 9 am Boden 8 abgedichtet. Mit der Bodenplatte 10 der Aufnahmevorrichtung 2 ist ein mit einer Bohrung 11 versehener, nadelförmiger Zapfdorn 4 fest verbunden, dessen Spitze in das Ventil 6 hineinragt, wobei ein Radialdichtring 12 zwischen dem Zapfdorn 4 und dem Fußteil 7 des Ventils 6 angeordnet ist. Die Spitze des Zapf-

dorns 4 greift in eine Zentrierung des mit einer Dichtung 13 versehenen Ventiltellers 14 ein, der sich über die Feder 15 gegen den Deckel 16 des Ventils 6 abstützt. Der Deckel 16 ist über vier Stützen 17 an dem Fußteil 7 des Ventils 6 befestigt. Der Farbbehälter 3 weist die Standfüße 18 und den Deckel 19 auf. Der Zapfdorn 4 ist mit zwei, die Bohrung 11 mit dem Inneren des Farbbehälters 3 verbindenden Querbohrungen 20 und mit dem Radialflansch 21 versehen. Über die Überwurfmutter 22 ist die am Zapfdorn 4 befestigte Aufnahmevorrichtung 2 mit dem Stutzen 23 der nicht dargestellten Spritzpistole verbunden, wobei zwischen Zapfdorn 4 und Stutzen 23 eine Dichtung 24 angeordnet ist. Der Ring 5 am oberen Ende der Aufnahmevorrichtung 2 ist über den Deckel 19 des Farbbehälters 3 weggeschwenkt.

Beim Einsetzen des mehrfach verwendbaren Farbbehälters 3 in die Aufnahmevorrichtung 2 durchdringt der nadelförmige Zapfdorn 4 das Fußteil 7 des Ventils 6, wobei der Radialdichtring 12 den Ringraum zwischen dem Zapfdorn 4 und dem Fußteil 7 abdichtet. Die in die Zentrierung des Ventiltellers 14 eingreifende Spitze des Zapfdorns 4 hebt den Ventilteller 14 und die an diesem befestigte Dichtung 13 gegen die Wirkung der Feder 15 vom Fußteil 7 ab. Die Feder 15 stützt sich dabei an dem Deckel 16 des Ventils 6 ab, der über die Stützen 17 mit dem Fußteil 7 verbunden ist. Farbe aus dem Farbbehälter 3 kann nun an den Stützen 17 vorbei durch die vom Ventilteller 14 freigegebene Öffnung in den leicht trichterförmigen Ringraum zwischen dem Zapfdorn 4 und dem Fußteil 7 des Ventils 6 fließen und von dort durch die am Zapfdorn 4 angebrachten Querbohrungen 20 in die mit der Sprühdüse der Farbspritzpistole kommunizierende Bohrung 11 des Zapfdorns 4.

Die Querbohrungen 20 bringen den Vorteil mit sich, daß Farbe tief unten im Farbbehälter 3 und nur wenig oberhalb des Radialdichtringes 12 aufgenommen und in die Farbspritzpistole geleitet werden kann. Hierdurch werden die Farbverluste beim Wechsel der Lackfarbe möglichst gering gehalten. Bevor beim Herunterziehen des Farbbehälters 3 vom Zapfdorn 4 die Dichtwirkung des Radialdichtringes 12 aufgrund der sich verjüngenden Zapfdornspitze nachläßt, schließt das Ventil 6 bereits wieder. Der Farbbehälter 3 kann nun mit Farbe aufgefüllt, mit einem luftdicht schließenden Deckel verschlossen und bis zum nächsten Gebrauch gelagert werden, wobei er auf die Standfüße 18 aufgestellt wird. Um auch bei Einwegbechern ein annähernd vollständiges Entleeren zu ermöglichen, sollten die Querbohrungen 20 dicht oberhalb des Becherbodens aus dem Zapfdorn austreten. Durch Drehen der Aufnahmevorrichtung 2 und damit des Zapfdorns 4 auf dem Stutzen 23 der nicht dargestellten Spritzpistole kann auch bei ungünstiger Haltung der Spritzpistole die Farbe nahezu vollständig verspritzt werden. Dies ist insbesondere bei der Verwendung von Einwegbechern als Farbbehälter 3 von Vorteil. Hierzu ist der Zapfdorn 4 über eine den Radialflansch 21 hintergreifende Überwurfmutter 22 am Stutzen 23 der Farbspritzpistole drehbar und mittels der Dichtung 24 flüssigkeitsdicht befestigt.

Um ein Ausfließen oder Herausschwappen von Farbe zu verhindern, wird der Farbbehälter während des Spritzvorgangs zweckmäßigerweise mit einem Deckel verschlossen, oder es wird eine oberseitig aufgeschweißte Verschlussfolie nur mittig angestochen, um einen Druckausgleich zu ermöglichen. Ein gesonderter Verschlussdeckel muß mit einer Öffnung zur Luftzufuhr versehen sein, um das Auftreten von Unterdruck im Inneren des Farbbehälters beim Entleeren zu vermei-

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den. Zur Lagerung des mehrfach verwendbaren Farbbehälters kann diese Öffnung dann in einfacher Weise mit einem luftdichten Klebeband verschlossen werden.

Als Verschlußmechanismen für das Ventil 6 können auch federbelastete Klappen oder die Einstecköffnung für den Zapfdorn 4 aufgrund ihres Eigengewichtes verschließende Dichtkörper wie Kugeln oder Kegel vorgesehen werden, die beim Aufstecken des Farbbehälters 3 vom Zapfdorn 4 von ihrem Dichtsitz abgehoben werden.

Hierzu 1 Blatt Zeichnungen

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Fig. 2

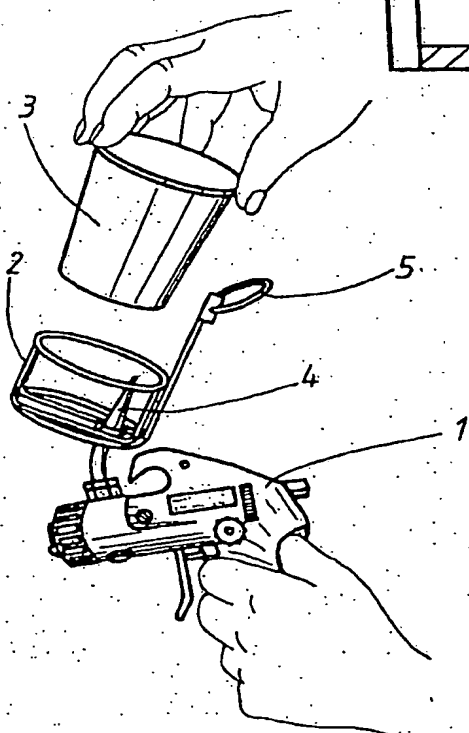
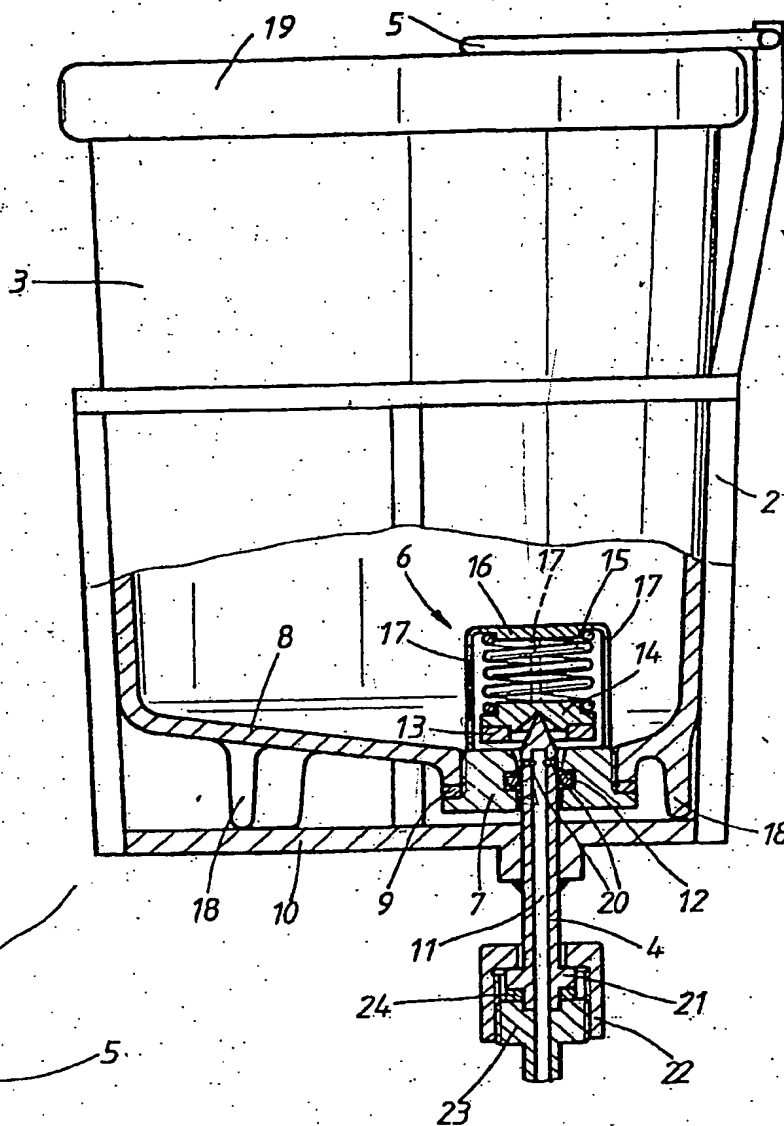


Fig. 1

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- Derwent Title: **Paint spray gun with paint can retainer - which has conical, hollow piercing mandrel, extending from retainer bottom upwards**
- Original Title: ☒ **DE3517122C1: Korb- oder becherfoermige Aufnahmevorrichtung fuer Farbbehaelter an Farbspritzpistolen**
- Assignee: **DAIMLER-BENZ AG** Standard company
Other publications from [DAIMLER-BENZ AG \(DAIM\)...](#)
- Inventor: **SCHILLIG R;**
- Accession/Update: **1986-138334 / 198622**
- IPC Code: **B05B 7/24 ;**
- Derwent Classes: **P42;**

Derwent Abstract: ([DE3517122C](#)) The hand held paint spray gun which uses a canister as its paint source, has a spiked tube (4) on top, which is used to pierce the bottom of the canister (3). Attached to the tube is a cage (2) for the canister, locked in position by an arm with a locking ring (5) on top.

The spiked tube has side entry holes, and the canister incorporates a self-operating relief valve in its surface, which is pierced by the spike, and which is eccentrically positioned, the surface sloping down towards it. The cage can be rotated about the axis of the spiked tube. The canister may have sloping sides so that it can only be inserted the right way up.

Advantage - The device enables smaller areas to be covered, e.g. a vehicle door, and changeover of colour is simple.

[Dwg.1/2](#)

Family:

PDF	Patent	Pub. Date	Derwent Update	Pages	Language	IPC Code
<input checked="" type="checkbox"/>	DE3517122C	* 1986-05-28	198622	5	German	B05B 7/24

Local appls.: [DE1985003517122](#) Filed:1985-05-11 (85DE-3517122)

INPADOC Legal Status: [Show legal status actions](#)

First Claim: [Show all claims](#)

1. Korb- oder becherfoermige Aufnahmevorrichtung fuer Farbbehaelter an Farbspritzpistolen, welche den Farbbehaelter lagedefiniert und kippsicher aufnimmt, wobei das Innere des Farbbehaelters ueber einen den Boden des Farbbehaelters durchdringenden Kanal fluidisch mit der Spruehduese der Farbspritzpistole in Verbindung steht, dadurch gekennzeichnet, dass die Aufnahmevorrichtung (2) einen in Aufnahmerichtung des Farbbehaelters (3) sich erstreckenden, vorzugsweise kegelfoermigen, hohlen, oder als Hohl-nadel oder dergleichen ausgebildeten Zapfdorn (4) aufweist, auf den der Farbbehaelter (3) fluessigkeitsdicht aufsteckbar ist.

Priority Number:

Application Number	Filed	Original Title
DE1985003517122	1985-05-11	KORB- ODER BECHERFOERMIGE AUFNAHMEVORRICHTUNG FUER FARBBEHAELTER AN FARBSPRITZPISTOLEN

Title Terms: PAINT SPRAY GUN PAINT CAN RETAIN CONICAL HOLLOW PIERCE MANDREL
EXTEND RETAIN BOTTOM UP

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United States Patent [19]

Rookard, Jr.

[11] 4,272,768

[45] Jun. 9, 1981

[54] MULTI-PURPOSE SURVIVAL CANTEEN

[76] Inventor: Johnnie P. Rookard, Jr., 1061-72nd Ave., Apt. 4, Oakland, Calif. 94621

[21] Appl. No.: 113,442

[22] Filed: Jan. 21, 1980

[51] Int. Cl.³ H01Q 15/18; B65D 1/04

[52] U.S. Cl. 343/18 C; 215/6; 215/13 R

[58] Field of Search 343/18 C; 215/6, 13 R

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Primary Examiner—T. H. Tubbesing

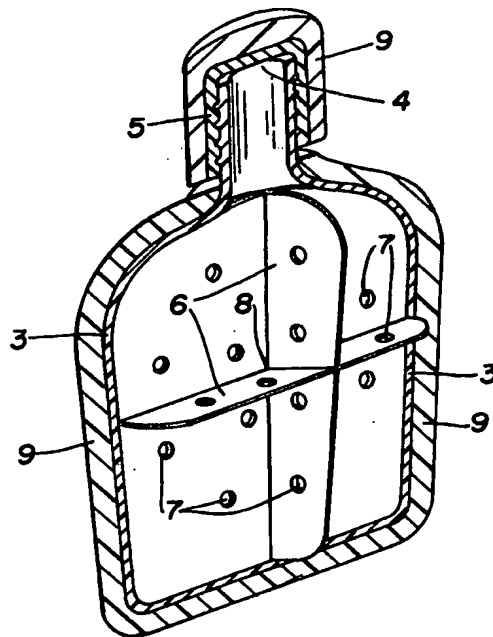
Attorney, Agent, or Firm—Manfred M. Warren; Robert B. Chickering; Glen R. Grunewald

[57]

ABSTRACT

A survival canteen is disclosed which has a substantially microwave transparent vessel for holding liquid. The vessel has internal microwave-reflective baffles which divide the vessel into chambers. Openings between the chambers allow damped fluid flow therebetween. The baffles are positioned to define at least one corner reflector so as to provide a highly reflective radar target.

7 Claims, 3 Drawing Figures



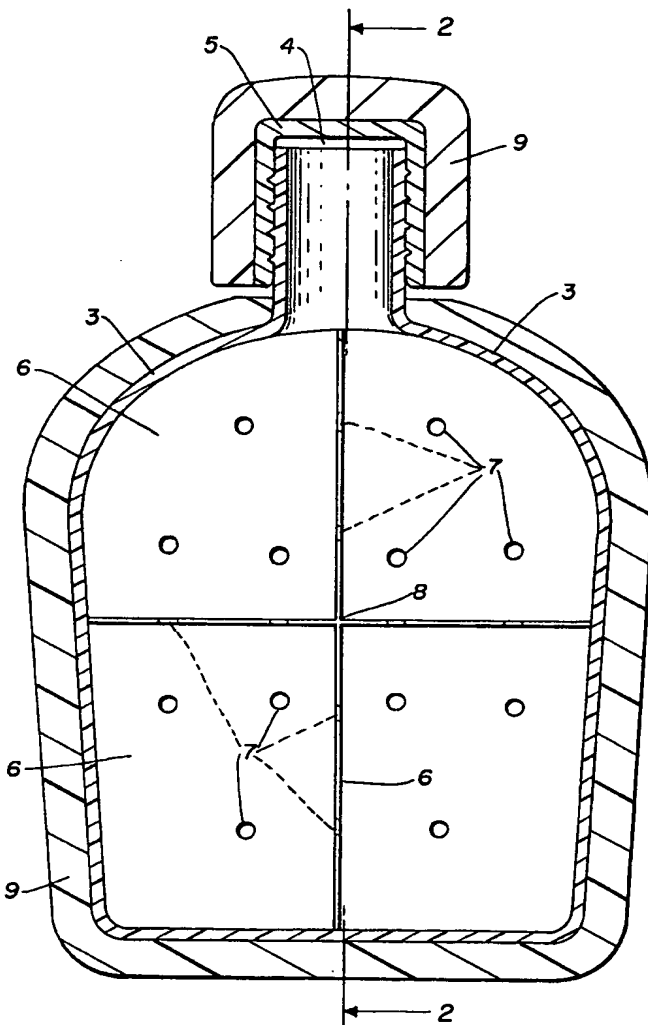


Fig. 1

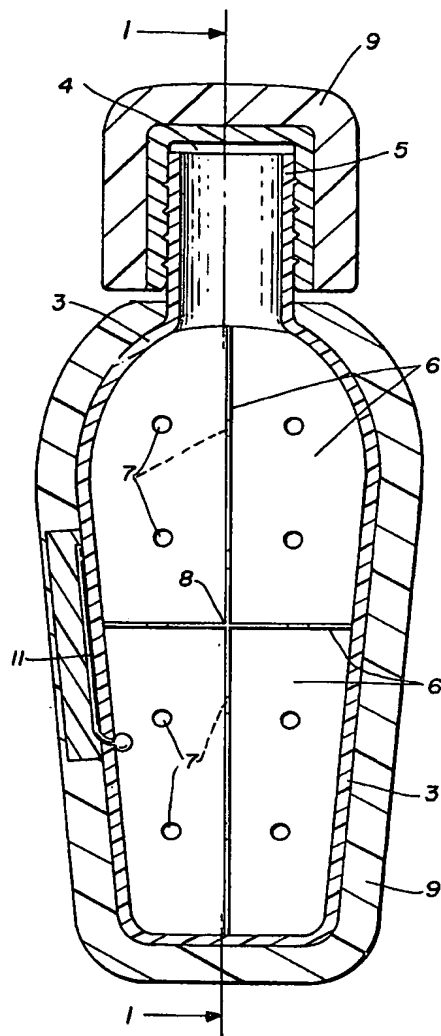


Fig. 2

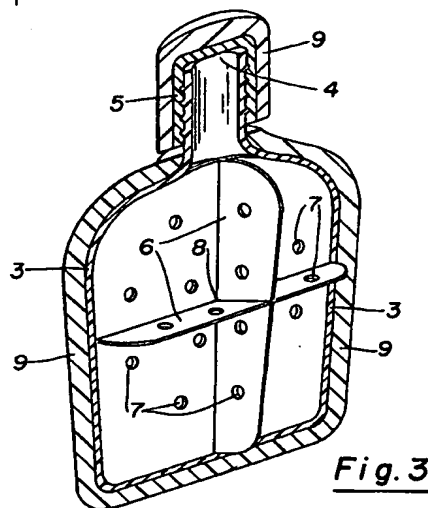


Fig. 3

MULTI-PURPOSE SURVIVAL CANTEEN

BACKGROUND OF THE INVENTION

1. Field of Invention

The invention relates generally to canteens and related personally carried liquid containers and, more specifically, to marine survival equipment.

2. Description of Prior Art

The word "canteen" is normally used to describe a portable flask for carrying water or other liquids. The most familiar type of canteen is the cloth-jacketed metal flask issued to soldiers as a part of their mess kit. Plastic has found wide use in the construction of modern canteen vessels owing to its comparative advantages to metal in the areas of cost, thermal conductivity, and ease of manufacture. Canteens are usually carried by means of a strap, belt, or other personally worn affixing device.

A canteen, when completely filled with liquid, presents little problem to the carrying person. The full canteen responds to normal body movements in a predictable manner, very much like that exhibited by a solid object. When the contents of the canteen have been partially emptied, however, the body movements of the carrying person cause sloshing within the canteen. This sloshing sets up a complex set of forces on the canteen and results in motion similar to that exhibited by a compound pendulum. Unless the partially emptied canteen is tightly strapped to the person, it will exhibit the aforementioned erratic motion, which can be annoying or even physically irritating, depending upon how the canteen is worn.

In the field of marine survival equipment, many inventions have been disclosed which aid in the flotation, insulation, and location of a person who is overboard. Flotation devices include life jackets, life rings, and various types of inflatable air bladders. Since a person's survival time is drastically decreased when immersed in cold water, several devices have been disclosed to insulate the body to prevent heat loss. These devices include so-called survival suits, which are very similar to the neoprene suits worn by skin divers. There have also been many devices disclosed to aid in the location of a person who has been lost overboard. These devices include passive structures such as brightly colored apparel and signal mirrors for reflecting sunlight, as well as active devices, such as electric lights and portable radio transmitters.

Although the aforementioned survival devices can be quite effective, they are bulky, expensive, and serve no purpose other than safety. Because of these drawbacks, few sailors wear the aforementioned survival devices during their normal day-to-day duties. Since many man-overboard accidents have happened inadvertently during non-emergency work situations, persons such as the aforementioned sailors have been denied the benefit of survival equipment.

Marine radar is a highly effective tool in locating and tracking the position of targets having suitable microwave-reflective qualities. It has long been known that a so-called corner reflector, comprising three perpendicular intersecting planes of microwave-reflective material, such as metal, provides an excellent radar target. The geometry of the corner reflector causes any incident ray to be reflected in an exactly parallel direction. Corner reflectors have found wide use on buoys,

boats, and other objects where safety depends on their effective detection by radar.

The canteens and various marine survival devices of the prior art are all distinguishable from the instant invention in that none discloses or even suggests the unique structure of a microwave-transparent canteen having internal microwave-reflective baffles which aid in maintaining its dynamic stability and which are configured so as to provide a highly efficient radar target.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a multi-purpose survival canteen having the following features:

- (a) a canteen which can be comfortably worn when partially full and which does not exhibit the undesirable dynamic characteristics caused by undamped sloshing of the liquid contents;
- (b) a canteen which has suitable thermal insulation so as to enable the user to carry hot liquids, such as coffee, and to maintain the temperature of the liquid over a reasonable period of time;
- (c) a canteen which will, when the user is overboard, provide means for increasing his flotation;
- (d) a canteen which will, even when full, float itself so that it is not a burden to a swimming user and can provide protection against fatal hypothermia (death from body heat loss) by allowing the user to drink its heated contents periodically while awaiting rescue;
- (e) a canteen which will provide a highly reflective radar target.

The present invention is a multi-purpose survival canteen having the form of a substantially microwave-transparent vessel for holding liquid. The vessel has a sealable mouth to enable the user to drink from the canteen. Internal microwave-reflective baffles are provided which divide the vessel into chambers. Openings between the chambers allow fluid to flow therebetween in a damped fashion. This prevents uncontrolled sloshing and results in stable, desirable dynamic characteristics even when the canteen is partially full. The baffles are positioned so as to define at least one corner reflector. This is accomplished by arranging at least three baffles so that they are perpendicular to each other and intersect at at least one point. The geometry of the corner reflector assures that an incident beam of microwave energy from a radar transmitter will be reflected in an exactly parallel path, thus assuring detection by the receiver. When the baffles are arranged as shown in the drawings, eight corner reflectors are provided.

Since it is desirable to have effective thermal insulation as well as increased flotation, the vessel of the instant invention can be surrounded by certain materials, such as closed-cell plastic foams which are reasonably transparent to microwave energy. These foams have very good thermal insulation properties and desirable flotation characteristics.

The present invention, by providing a comfortably worn, thermally insulated liquid container which has a number of important and effective life-saving features, greatly increases the probability that the canteen will be worn by sailors during their normal duties. Most of the survival devices in the prior art are seldom worn during non-emergency situations since they provide no immediate benefit to the user and often interfere with his movements and comfort. The instant invention can provide the user with a ready cup of hot coffee, which makes it desirable apart from its use as a life-saving

device. All of the devices in the prior art, no matter how effective, are of no use if not worn by the user. Only one of the instant invention's many life-saving features is forfeited when the container is empty. The ingestion of heated liquids can be used to delay the onset of fatal hypothermia by partially compensating for body heat which has been lost to the surrounding water. When the container is empty, its flotation and radar-reflective characteristics are actually enhanced. The importance of radar as a means of locating a person in distress cannot be over-emphasized. At night or during conditions of reduced visibility, radar is far more effective than human eyesight. Although the canteen of the instant invention provides a relatively small surface area, the arrangement of the internal baffles into a corner reflector configuration assures the maximum possible reflection of incident microwave energy. Modern search radars, such as those carried by Coast Guard helicopters, can detect small targets. The corner reflector within the vessel would provide a consistent radar target which could be easily discriminated from sea clutter and floating debris, which display erratic reflective characteristics due to their shape and composition.

The invention possesses other objects and features of advantage, some of which of the foregoing will be set forth in the following description of the preferred form of the invention which is illustrated in the drawings accompanying and forming part of this specification. It is to be understood, however, that variations in the showing made by the said drawings and description may be adopted within the scope of the invention as set forth in the claims.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a front elevation view in cross-section taken substantially along the plane of line 1—1 of FIG. 2.

FIG. 2 is a side elevation view in cross-section taken substantially along the plane of line 2—2 of FIG. 1.

FIG. 3 is a top perspective view in reduced scale, partially cut away.

DETAILED DESCRIPTION OF THE INVENTION

The multi-purpose survival canteen of the present invention comprises, briefly, a substantially microwave-transparent vessel 3 for holding liquids having a sealable mouth 4. In the preferred embodiment, the mouth is threaded and covered with a screw-on cap 5. The vessel 3 has internal microwave-reflective baffles 6 which divide the vessel into chambers. Openings 7 are provided between the chambers to allow damped fluid flow therebetween. The baffles 6 are positioned to define at least one corner reflector 8 where three baffles meet at perpendicular angles.

In order to improve the thermal insulating efficiency and flotation of the canteen, the vessel 3 is, in the preferred embodiment, surrounded by microwave-transparent thermal insulating material 9 which has density and volume sufficient to maintain the vessel buoyant when filled with liquid. The cap 5 is similarly surrounded with foam 9 in the preferred embodiment.

The openings 7 in the baffles 6 are made sufficient in size and number to dampen the sloshing of liquid between chambers, while allowing liquid to be drained through the mouth 4 at a rate suitable for drinking. In the preferred embodiment, an externally viewable thermometer 11 is provided which measures and displays the temperature of the fluid contained within the vessel 3. The baffles 6 are arranged in the vessel so as to define eight corner reflectors. Baffle materials such as aluminum and stainless steel are good reflectors of microwave energy and are highly resistant to corrosion which might contaminate the contents of the vessel. Insofar as the composition of the vessel 3 is concerned, fiberglass, resin, and various polyethylene-type plastics have been found to provide suitable structural integrity and microwave transparency.

What is claimed is:

1. A survival canteen comprising:
 - a substantially microwave transparent vessel for holding liquid, having a sealable mouth;
 - said vessel having internal microwave reflective baffles dividing the vessel into chambers and openings between the chambers to allow damped fluid flow therebetween; and
 - said baffles positioned to define at least one corner reflector.
2. The canteen of claim 1, said vessel surrounded by microwave transparent thermal insulating material.
3. The canteen of claim 2, said material having density and volume sufficient to maintain the vessel buoyant when filled with liquid.
4. The canteen of claim 1, said openings being sufficient in size and number to dampen sloshing of liquid between chambers while allowing liquid to be drained through said mouth at a rate suitable for drinking.
5. The canteen of claim 1, and an externally viewable thermometer adapted to measure and display the temperature of the fluid within said vessel.
6. The canteen of claim 1, said baffles having stainless steel composition and defining eight corner reflectors.
7. The canteen of claim 1, said baffles having aluminum composition and defining eight corner reflectors.

* * * * *

[54] **CONTAINERS UTILIZED IN
ELECTROSTATIC SPRAYING**

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[21] Appl. No.: **228,556**
[22] Filed: **Jan. 26, 1981**

Related U.S. Application Data

- [60] Division of Ser. No. 78,434, Sep. 24, 1979, Pat. No. 4,275,846, which is a continuation-in-part of Ser. No. 953,774, Oct. 19, 1978, Pat. No. 4,209,134.

[30] **Foreign Application Priority Data**

- Sep. 26, 1978 [GB] United Kingdom 38180/78
[51] Int. Cl.³ **B05B 5/02**
[52] U.S. Cl. **239/690; 239/377**
[58] Field of Search 239/3, 690, 691, 696,
239/302, 376, 377, 379; 261/228, 235; 427/4,
30; 174/50.5, 50.52, 50.53, 50.6, 59; 118/629

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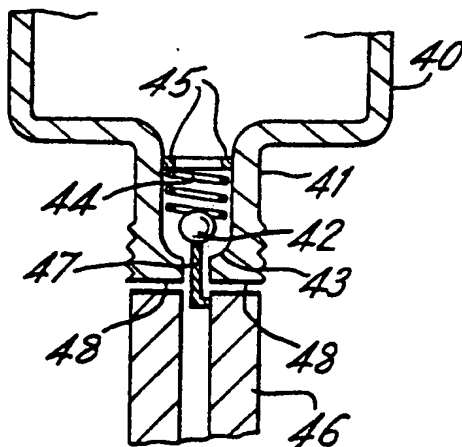
Primary Examiner—Andres Kashnikow

Attorney, Agent, or Firm—Cushman, Darby & Cushman

[57] **ABSTRACT**

A liquid container is provided adapted to form a part of apparatus for electrostatic spraying of liquids, such as pesticides. The container includes a body having an orifice for delivering liquid to a spray nozzle, and a closure for sealing the orifice prior to location of the container on the apparatus. The orifice is opened only when the container is mounted on the apparatus, and the orifice is reclosed when removed from the apparatus. An electrostatic valve may comprise the closure.

5 Claims, 9 Drawing Figures



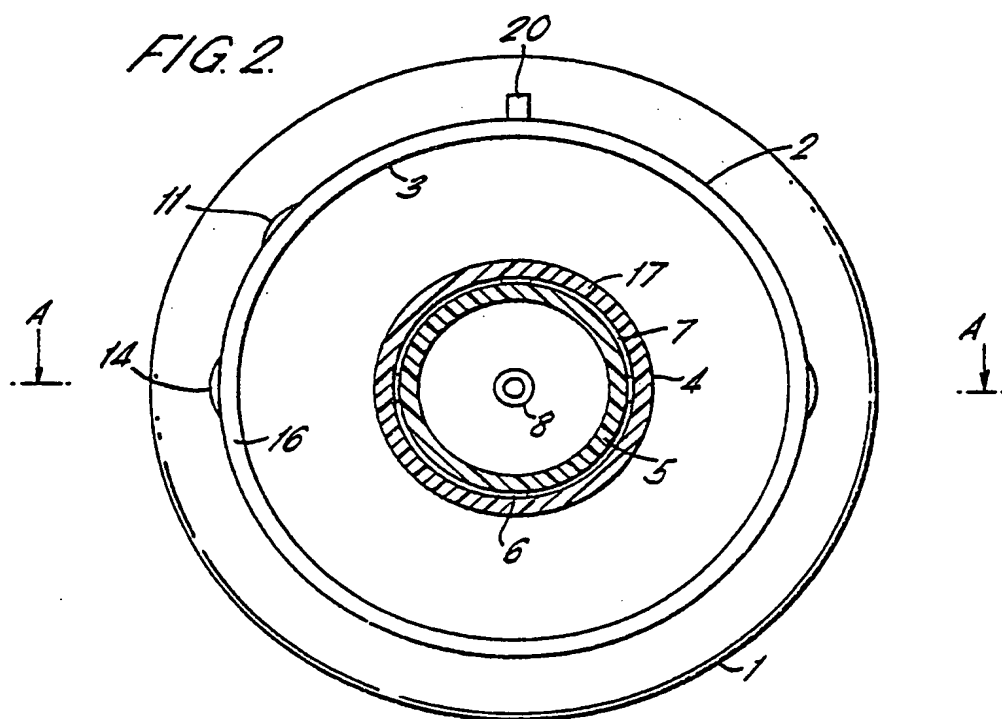
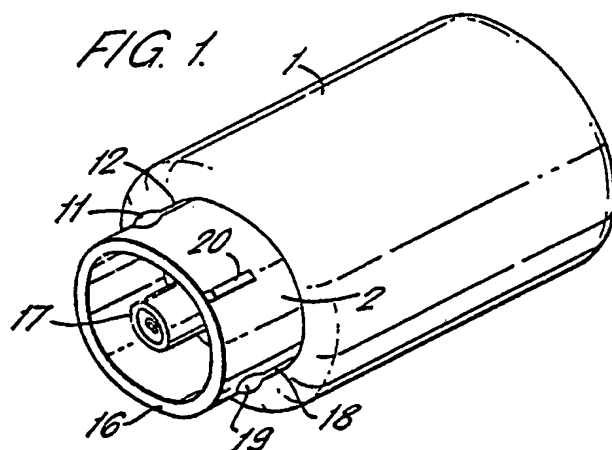


FIG. 4.

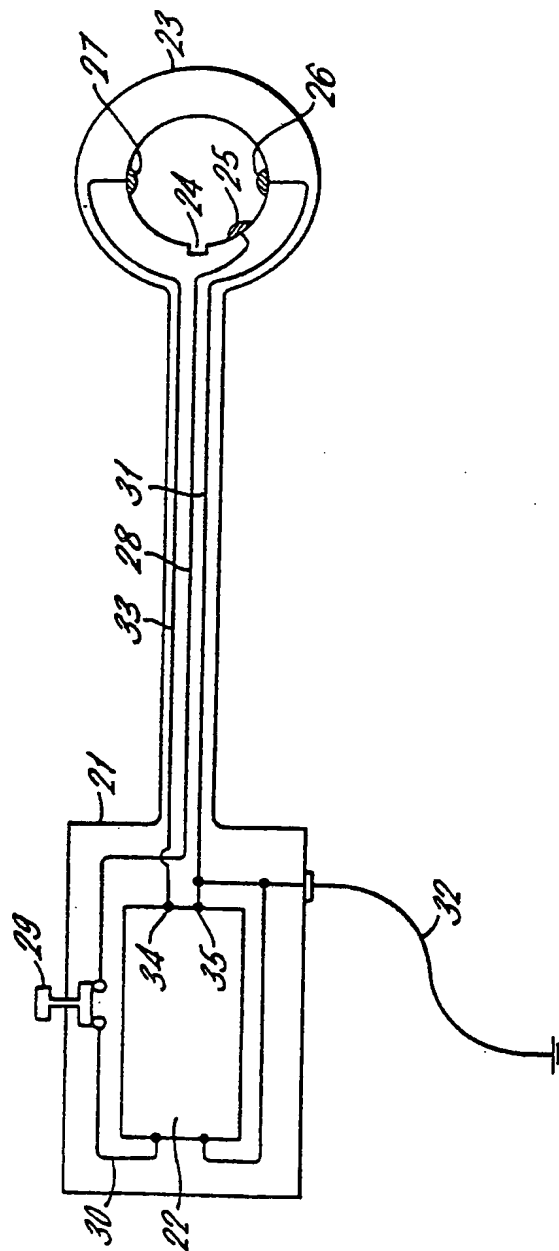


FIG. 5.

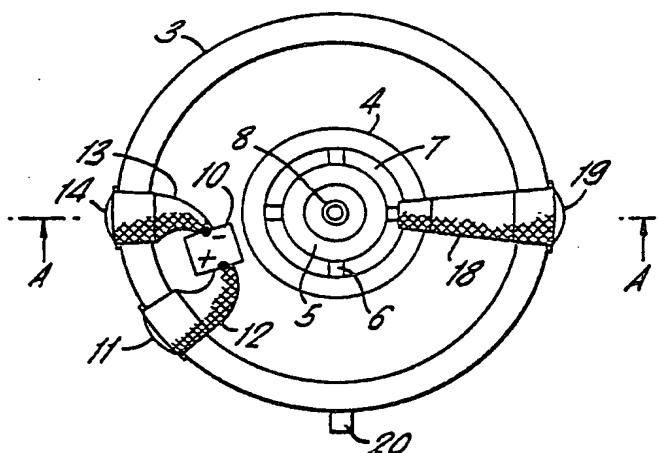
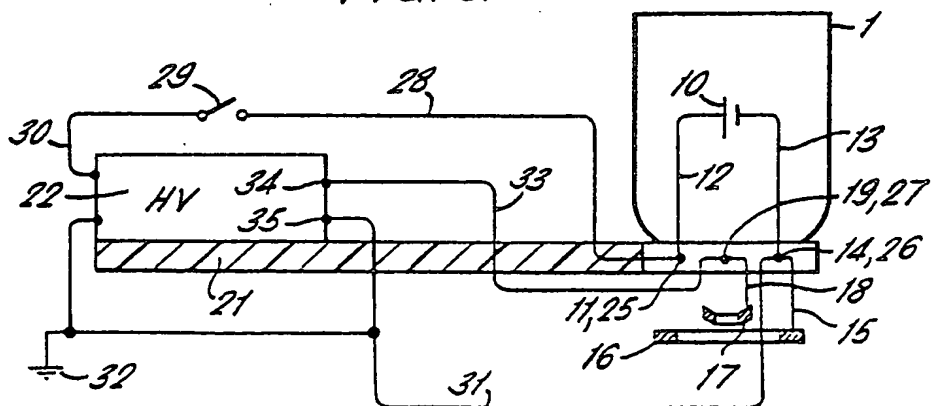


FIG. 6.



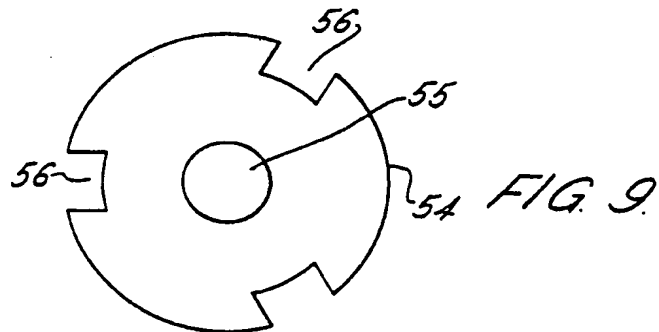
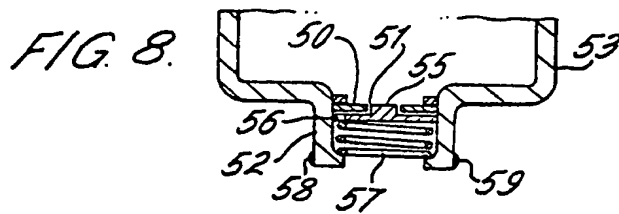
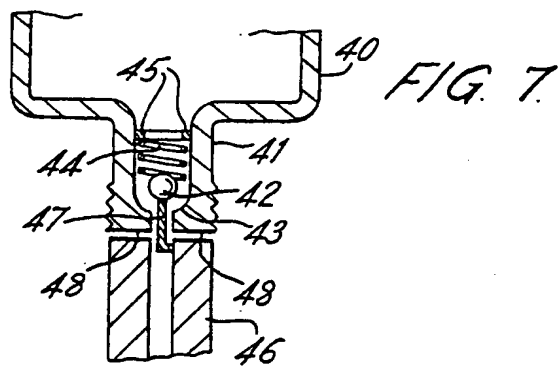
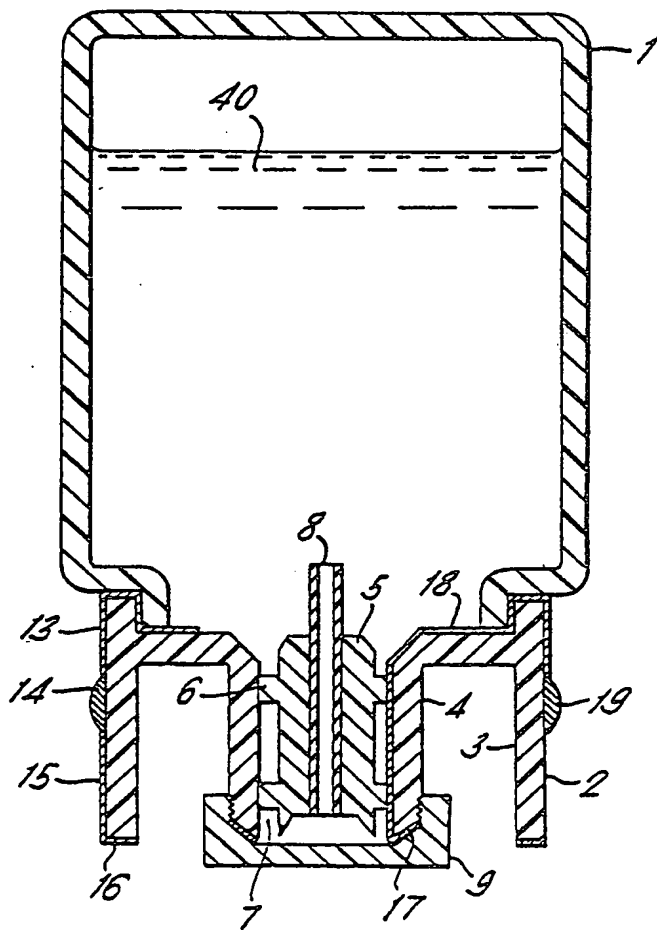


FIG. 3.



CONTAINERS UTILIZED IN ELECTROSTATIC SPRAYING

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a divisional of application Ser. No. 78,434 filed Sept. 24, 1979, now Pat. No. 4,275,846, which application in turn is a continuation-in-part of Ser. No. 953,774 filed Oct. 19, 1978, now Pat. No. 4,209,134.

This invention relates to containers, and in particular to containers for use in the electrostatic spraying of liquids.

In our copending Application No. 29539/76 (U.S. Ser. No. 812,440, now abandoned) we have described an apparatus for the electrostatic spraying of liquids. This apparatus is of simple construction, with a low power requirement (it has no moving parts and can readily be run off dry cells); it is thus particularly suited for use as a hand held sprayer in applications where large power sources are not readily available: for example, in spraying crops. Electrostatic spraying of crops also has advantages in promoting even coating of plants, with spray being attracted around behind foliage instead of coating only exposed surfaces; and in reducing spray drift, which is at best wasteful and at worst hazardous to the environment.

The apparatus disclosed in Application No. 29539/76 comprises essentially a discharge nozzle; an electrode disposed around the nozzle; a container for supplying liquid to be sprayed to the nozzle; and a high voltage generator for applying a high voltage to the electrode, the electrode being earthed. In this way a strong electric field may be produced between the nozzle and the electrode, sufficient to atomise liquid passing through the nozzle.

This apparatus is particularly suitable for the application of pesticides at low or ultra-low volume (typically at a spray application rate in the range 0.5 to 10 litres spray liquid per hectare). Low and ultra-low volume spraying have several recognised advantages, as well as being especially suitable where water is not readily available as a spray diluent, but they also have one disadvantage. Of necessity, they must use relatively concentrated pesticidal compositions. Such compositions frequently have a greater or lesser degree of human toxicity, and for this reason it is desirable that they should be handled as little as possible. A particular danger is the decantation of poisonous liquids into beverage bottles.

A pesticide sprayer, to provide the best service, must be reliable and adaptable. Desirably it should be able to spray pesticides of several different kinds. Different pesticides come in different formulations, having different electrical properties, and requiring to be sprayed in differing droplet sizes to give optimum effect. In the apparatus of our copending Application No. 29539/76 (U.S. Ser. No. 812,440) useful and convenient control over droplet size and spraying properties can be provided by varying the applied voltage; but the size of the nozzle and the relative size and position of the surrounding electrode may also require adjustment to suit the formulation being sprayed. It is often difficult to do this reliably in the field. Also, pesticide sprayers (spray-tanks and spray-lines) normally require careful cleaning between application of different pesticides; otherwise, for example, traces of herbicide may damage crops

being sprayed against fungal attack. The need for such cleaning is increased when formulations are to be sprayed electrostatically, since contamination may affect their electrical properties. Thorough cleaning may damage nozzles, leading to incorrect spray application.

The object of the present invention is to provide containers suitable for use in electrostatic spraying apparatus of the kind described in U.K. patent application No. 29539/76 (U.S. Ser. No. 812,440) which enable a number of the problems outlined above to be mitigated or overcome.

According to the present invention in its broadest aspect, we provide a liquid container adapted to form part of apparatus for electrostatic spraying, the apparatus including a power source, a high voltage generator, a spray nozzle at least part of the surface of which is electrically conductive, an electrode disposed adjacent the nozzle and insulated therefrom with electrical connections for connecting the power source to the input terminals of the generator, the electrode to one output terminal and the nozzle to the other output terminal of the generator; the container having an orifice for delivering liquid, mounting means for locating the container on the apparatus in a position in which the orifice can deliver liquid to the spray nozzle, the mounting means including a conductor or conductors completing said electrical connections; and a closure or seal for closing the orifice prior to location of the container on the apparatus.

We further provide apparatus for electrostatic spraying as defined above, suitable for receiving a container according to the invention; and we further provide a sprayer formed by the combination of a container according to the invention mounted upon apparatus according to the invention. Throughout this specification, the term 'conducting surface' is intended to include a semi-conducting surface.

Prior to mounting on the spraying apparatus, the container orifice obviously requires to be sealed against the emission of liquid. One or more conventional sealing means may be employed, for example a screw cap or a metal foil seal over the orifice, or both. According to a preferred feature of the invention, the container seal is adapted to be opened when, and preferably only when, located on the spraying apparatus. Such opening may take place during such location, or subsequently: furthermore, the opening may be actuated mechanically or electrically. Thus, during the action of mounting the container on to the spraying apparatus, a knife or spike on the apparatus may cut or pierce a metal foil over the orifice of the container. The container orifice may be sealed by a valve, e.g. a spring-biassed ball valve which is opened during mounting by contact with a detent on the apparatus. With such a system the container orifice is automatically closed on removal from the apparatus which is particularly useful when the container still contains liquid. The same desirable end may also be accomplished by use of an electrostatic valve. Such a valve may be spring-biassed shut, and opened only by application of potential from the high voltage generator when the container is mounted on the apparatus. The electrostatic valve is particularly convenient because the container remains sealed even after being mounted on the apparatus, until the current is switched on.

In a narrower aspect of our invention, the spray nozzle forms part of the container rather than of the apparatus on which it is mounted. Thus, further according to

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the present invention we provide a container for liquid to be electrostatically sprayed, suitable for mounting on a holder carrying a high voltage generator, the container having: a spray nozzle at least part of the surface of which is electrically conductive; an orifice for delivering liquid to the nozzle; an electrode disposed about the nozzle and insulated therefrom; mounting means for locating the container on the holder; separate electrical connections from the nozzle and the electrode to separate contacts on the mounting means so placed that when the container is located on the holder by the mounting means each contact can make electrical connection with one output terminal of the high voltage generator; and a seal for closing the orifice prior to location on the holder.

We further provide a holder suitable for receiving a container according to the invention which comprises a body carrying a high voltage generator, and mounting means complementary to the mounting means on the container provided with separate electrical contacts complementary to those on the container for electrical connection to separate terminals of the high voltage generator.

A further feature of the invention is the sprayer formed by the combination of a container according to the invention mounted upon a holder according to the invention.

Preferably means are provided for maintaining one terminal of the high voltage generator at or near earth potential. Such means may be a conductor for connection to earth, for example, a trailing earth wire dependant from the holder. Where such means are provided, it is preferred that the earthed terminal of the high voltage generator is arranged for connection to the container electrode rather than to the nozzle. Charging of the spray is then by direct contact, rather than by induction, and there is a stronger electrostatic field transporting the spray to its (earthed) target.

If desired, one of the two electrical connections between the contacts on the container and the high voltage generator terminals may be through earth; though a more direct connection is sometimes convenient.

For most efficient operation the container also requires a means of equalising the external and internal pressure during spraying, for example an air vent, or non-rigid walls.

Containers according to the invention may be filled with properly formulated spray liquid by the manufacturer, and after the containers are closed, the spray liquid will remain uncontaminated until it is actually sprayed. There is no need to clean spray-tanks (or even spray-lines or nozzles, if the nozzle forms part of the container) to avoid contamination, so different products can be sprayed successively without undue loss of time. Toxic hazards through handling by operators are minimised; errors by field operators in mixing and dilution procedures are eliminated. After use, the containers according to the invention may be returned to the manufacturer for refilling; or may be discarded. Containers may be made from one or more elements of plastics material by, for example, injection moulding or blow moulding, or a combination of the two. The conducting elements of the containers (nozzle, electrode, contacts and connections) may be provided by metal inserts, or (for all parts except the contacts) by application of conductive metallic coatings or paints to the container surface or by the use of partly-conducting plastics.

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It is possible to provide the energy source for the high voltage generator in the holder. It may be preferred however to provide it in the container. Accordingly, in a different aspect the invention provides a container for liquid to be electrostatically sprayed, suitable for mounting on a holder carrying a high voltage generator; the container being provided with: an orifice for delivering liquid to a spray nozzle; a power source capable of providing sufficient electrical energy to atomise electrostatically the actual or intended contents thereof; mounting means for locating the container on the holder; and separate electrical connections from the poles of the power source to separate contacts on the mounting means so placed that when the container is located on the holder by the mounting means each contact can make electrical connection with one input terminal of the high voltage generator; and a seal for closing the orifice prior to location on the holder. It is further preferred that the container be provided with a spray nozzle at least part of the surface of which is electrically conductive and an electrode disposed about the nozzle and insulated therefrom, the nozzle and the electrode being disposed to be electrically connected via contacts on the mounting means to opposite terminals of the high voltage generator when the container is located on the holder; but a sometimes convenient alternative is to provide such an electrode, or such a nozzle, or both, on the holder. In a particularly convenient arrangement, the mounting means on the container has three electrical contacts; one for connecting one pole of the power source to a first input terminal of the generator; one for connecting the nozzle to a first output terminal of the generator; and one for connecting the second pole of the power source and the electrode to a conductor on the holder connected to the second input and output terminals of the generator, and capable of connection to earth.

One suitable form of power source is an electrical storage battery. The amount of electrical energy required to atomise liquid is remarkably low. A typical example may be considered: a vessel containing 500 ml of liquid to be sprayed at a rate of 0.5 ml per second, with a droplet size of about 100 microns, and a charge to mass ratio of 5×10^{-3} coulombs per kilogram. The current carried by droplets atomising from the nozzle is thus 2.5 microamperes. The spraying time will be 1000 seconds (just over quarter of an hour) at an input current of, typically, 15 milliamperes, an input voltage of about 10 volts and an output voltage of 20 kilovolts. Thus the required cell rating is only 4 milliampere hours, at about 10 volts. This capacity is considerably less than that of most readily available torch batteries. If the containers are to be discarded after use, batteries of the necessary rating can be made cheaply on a large scale; alternatively, small quickly rechargeable batteries may be used. An example of another form of power source which may be used in the invention is a solar cell. Suitable high voltages for use in the invention range from about 1 to about 30 kilovolts, and most conveniently from about 5 to about 20 kilovolts.

A specific embodiment of the invention will now be described with reference to the drawings, in which:

FIG. 1 is a perspective view of a container according to the invention;

FIG. 2 is an end view of a container according to the invention;

FIG. 3 is a vertical section through the container on the line AA of FIG. 2;

FIG. 4 is a plan view of the holder;

FIG. 5 is a plan view of the collar of the container;

FIG. 6 is a circuit diagram of the circuit formed when the container is mounted on the holder.

FIG. 7 is a vertical section through the neck of a second container according to the invention.

FIG. 8 is a vertical section through the neck of a third container according to the invention.

FIG. 9 is a plan view of plate 54 shown in FIG. 8.

With reference generally to FIGS. 1 to 3 and 5, the container comprises a generally flask-shaped body (1) of blow-moulded high density polyethylene, the neck of which is in liquid-tight sealed engagement with a collar (2) injection-moulded from polyacetal. It contains a solution (40) of 10% by weight of an insecticide in an aromatic hydrocarbon solvent. The collar (2) is formed of two concentric cylinders (3) and (4) joined near their ends to form an annulus. Within the inner cylinder (4) is a polyacetal plug (5), whose external diameter is somewhat less than that of the internal diameter of the cylinder (4). The plug (5) is held in place within the cylinder (4) by outwardly projecting lugs (6). It thus forms, in cooperation with the cylinder (4), an annular channel (7) of capillary dimensions through which spray liquid may pass. The plug (5) is also provided with a central bore carrying a polythene capillary tube (8) which extends upwardly into the body (1) of the container. The annular nozzle formed by the combination of the plug (5) and the cylinder (4) is closed against liquid leakage by sealing cap (9) (shown in position only in FIG. 3). Within the container on the upper surface of the collar (2) is carried a 10 volt battery (10). This battery is specially constructed, and contains sufficient electrical energy to atomise the liquid in the container, with an extra margin of 50% to allow for electrical leakage. The positive pole of the battery (10) is connected to a brass contact stud (11) on the outer wall of the collar (2) by a strip (12) of electrically conductive paint, passing from the battery (10) up over the rim of the collar (2) and down the outside thereof. The negative pole of the battery (10) is connected, by a similar conductive strip (13), to a second brass contact stud (14). Stud (14) is also connected, by a similar conductive strip (15), to the rim (16) of the cylinder (3). This rim (16) is itself coated with electrically conductive paint, to form an annular conductor. Similarly, the rim (17) of the inner cylinder (4) is coated with electrically conductive paint to form an annular conductor. The conductive rim (17) is connected by an electrically conductive paint strip (18), passing down the inside of the cylinder (4) and over the top rim of the collar, to a third brass contact stud (19) on the outside of the collar (2). To prevent current leakage through the spray liquid, the conductive strips (12), (13) and (18) are protected within the body (1) of the container by insulating varnish. A projecting key (20) is also formed on the outside of collar (2).

With reference now principally to FIG. 4, the holder for the container comprises a body (21) suitable for holding in the hand carrying a variable high voltage generator (22) (233P, 0-20 kilovolts, 200 microamp module, ex Brandenburg Limited). The body (21) is of generally elongated form, and terminates in a ring (23), the inside of which is adapted to receive the collar (2) of the container. A key way (24) corresponds to the key (20) on the collar (2). Brass contacts (25), (26) and (27) are mounted on the inside of the ring (23) so as to be able to contact studs (11), (14) and (19) on the container, respectively. Stud (25) is connected by an insulated

electrical conductor (28) to a switch (29), which, in the 'on' position, leads via a conductor (30) to the input terminal of the high voltage generator (22). Stud (26) is connected via an insulated electrical conductor (31) to a conductor (32) for connection to earth: the conductor (32) is a metal wire with a bared end for trailing along the ground. The stud (27) connects via an insulated electrical conductor (33) to the positive high voltage output terminal (34) of the generator (22). The negative output terminal (35) of the generator (22) is connected to the earth wire (32).

In operation, the container is placed in an upright position, and the sealing cap (9) removed. The ring (23) of the holder is then placed over the collar (2) of the container, over which it is a push fit, and the two mating parts are pushed together. The ring (23) grips the collar (2) sufficiently tightly to hold the container in position; the key (20) on the container cooperates with the key way (24) to hold the container in a position in which the following pairs of contacts touch: (11) and (25); (14) and (26); and (19) and (27). The circuit so formed is shown in FIG. 6. The holder is now used to invert the container over the target to be sprayed, and liquid starts to drip from the channel (7). The switch (29) is at once turned to the 'on' position. This permits current flow from the battery (10) via contacts (11) and (25) to the generator (22); and this in turn causes a high potential (conveniently 15 kilovolts) to be conveyed from the terminal (34) via contacts (27) and (19) to the electrically conducting surface (17) of the cylinder (4). Meanwhile the electrically conducting surface (16) of the cylinder (3) is earthed, via contacts (14) and (26) and earth wire (32). An intense electrostatic field is thereby created between the two conducting surfaces (17) and (16), which causes liquid emerging adjacent to the surface (17) to atomise, and be projected downwardly as a fine spray, of controlled particle size towards any desired target. As the liquid passes out of the container through the annular channel (7), the decreasing pressure within the container is equalised by air passing up through the central capillary tube (8). Spraying is stopped by turning off the switch (29) and turning the container mouth upwards.

Various modifications to the foregoing apparatus will be apparent to those skilled in the art. The container illustrated is intended to be disposable. However, reusable containers may also be made, conveniently with rechargeable batteries. For reusable containers, it may be found necessary to make the nozzle and electrode, as well as other electrical connections, of metal rather than merely of a conductive coating or paint; and for this reason such reusable containers are substantially more expensive.

The device described includes a conductor for connection to earth in the form of a trailing bare metal wire. This has the disadvantage that it may become caught up or tangled. The device works best with an earth connection; but it need not be of low resistance. The conductor for connection to earth may be, for example, a metallised strip along the handle of the holder. When the operator grasps the handle, an electrical pathway to earth is formed through the operator's body. Though this pathway has high resistance, we have found that it is generally adequate. Experiments have shown that, with an arrangement of this kind, the voltage on the container electrode may be up to about one or two hundred volts above that of earth, even when the operator is wearing rubber boots in relatively dry conditions.

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Such a voltage on the electrode is little different from that of earth, relative to the potential on the nozzle of several thousand volts. The current flowing through the operator is so small that there is no danger to him whatever, nor can he even feel anything.

The apparatus of the invention has been described with particular reference to its use in pesticide spraying, in particular of compositions comprising pesticides in organic liquid carriers, for which it has special advantages. However, it also has advantages in respect to spraying of coatings or paints, for example by the home decorator. Holders for the container are conveniently adapted for holding in the hand; but they may also be carried on vehicles such as tractors or aircraft, when they may support more than one container. It may however be preferred to use, in tractors or aircraft, a form of the invention in which the spray nozzle is not integral with the container. In this case, a relatively large container can supply several spray nozzles; and electrical power may be supplied from batteries or generators carried in the vehicle.

FIGS. 7, 8 and 9 illustrate two other closure devices which may be used in the containers of the invention. Both are illustrated in containers in which the spray nozzle is not integral. In FIG. 7, the container (40) has a neck (41) in which is mounted a simple mechanical ball valve, comprising a ball (42) urged against a seat (43) by a compression spring (44) mounted against stops (45). Prior to location on the spraying apparatus or holder (46), the ball valve prevents liquid leaving the container (40). On locating the container (40) on the apparatus (46), the ball (42) is forced inwards away from the seat (43) by a finger (47), permitting liquid to flow from the container (40) into the apparatus (46), for delivery to an electrostatic spray-head (not shown). At the same time, contacts (48) on the mouth of the neck (41) complete an electrical connection in the apparatus (46), permitting the supply of an appropriate high potential to the spray-head. FIG. 8 shows an alternative form of valve in a similar container; this valve is operated electrostatically. The valve comprises a metal plate (50) with a central port (51) mounted in the neck (52) of the container (53). Below the plate (50) is a second plate (54), shown in plan in FIG. 9. It has a central boss (55) which fits within the port (51) of plate (50) and closes it against passage of liquid. Plate (54) has peripheral slots (56), and is urged against plate (50) by a compression spring (57). Metal plates (50) and (54) are coated, on their lower and upper surfaces respectively, with a thin layer of a dielectric (epoxide resin). Contacts (58) and (59) on the outside of the neck (52) are electrically connected via the metal plates (50) and (54). In operation, the container (53) is mounted on a spraying apparatus (not shown) in fluid-tight engagement with a conduit leading to an electrostatic spray-head. Contacts (58) and (59) are thereby connected respectively to the output terminal of a high voltage generator and to the conducting surface of the electrostatic spray-head. A potential of about 20 kilovolts is thus applied to plates (50) and (54). This potential forces the plates apart by electrostatic repulsion against the action of the spring (57), and liquid flows from the container (53) through the port (51) and slots (56) into the apparatus for delivery to the spray-head. At the same time the spray-head receives a potential appropriate to atomise the liquid being delivered to it. Without the container on the apparatus, the electrostatic valve cannot open, and neither can potential be transmitted to the electrostatic spray-head.

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What is claimed is:

1. A liquid container adapted to form part of apparatus for electrostatic spraying, the apparatus including a power supply, high voltage generator having input and output terminals, a spray nozzle at least part of the surface of which is electrically conductive, an electrode disposed adjacent the nozzle and insulated therefrom, with electrical connections for connecting the power supply to the input terminals of the generator and the electrode to one output terminal of the generator and the nozzle to the other output terminal of the generator; the container comprising:

a body having an orifice for delivering liquid; mounting means for locating the container on the apparatus in a position in which the orifice can deliver liquid to the spray nozzle, the mounting means including a conductor or conductors forming part of the electrical connections for the apparatus; and

closure sealing means for closing the orifice prior to location of the container on the apparatus and so that the orifice is opened when and only when the container is mounted on the apparatus.

2. A liquid container as recited in claim 1 wherein said closure sealing means comprises means for re-closing automatically when the container is removed from the apparatus.

3. A liquid container as recited in claim 2 wherein said closure sealing means comprises an electrostatic valve.

4. A liquid container adapted to form part of apparatus for electrostatic spraying, the apparatus including a power supply, high voltage generator having input and output terminals, a spray nozzle at least part of the surface of which is electrically conductive, an electrode disposed adjacent the nozzle and insulated therefrom, with electrical connections for connecting the power supply to the input terminals of the generator and the electrode to one output terminal of the generator and the nozzle to the other output terminal of the generator; the container comprising:

a body having an orifice for delivering liquid; mounting means for locating the container on the apparatus in a position in which the orifice can deliver liquid to the spray nozzle, the mounting means including a conductor or conductors forming part of the electrical connections for the apparatus; and

closure sealing means for closing the orifice prior to the location of the container on the apparatus, and so that the orifice is automatically re-closed when the container is removed from the apparatus.

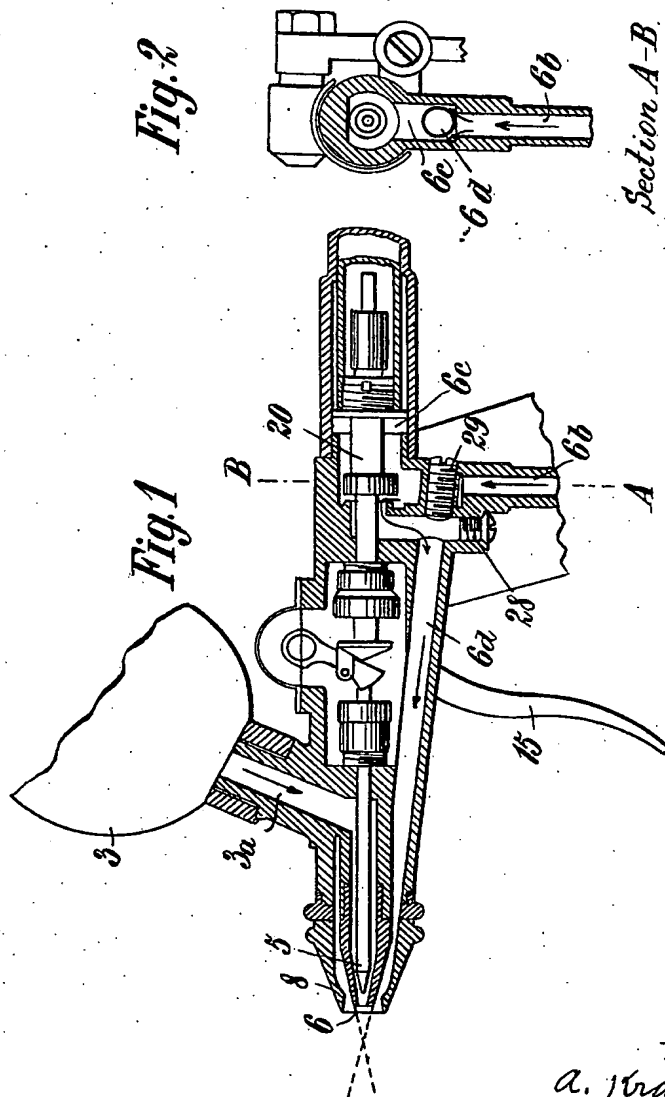
5. A liquid container as recited in claim 4 wherein said closure sealing means comprises an electrostatic valve.

* * * * *

Oct. 19, 1926.

1,603,612

A. KRAUTZBERGER
AIR AND COLOR SPRAYING APPARATUS
Filed Sept. 14, 1925



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UNITED STATES PATENT OFFICE.

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AIR AND COLOR SPRAYING APPARATUS.

Application filed September 14, 1925, Serial No. 56,312, and in Germany October 31, 1924.

The present invention relates to an appliance for spraying colors by means of compressed air, in which the spindle of the air valve and the color needle valve lie in line one behind the other. Such appliances are known. The purpose of the present invention is to construct such an appliance so that the passage through which the air flows shall allow a clear view to be obtained through it; further that the said air passage shall be capable of being cleaned by putting straight brushes through it. Furthermore, it can easily be ascertained, with apparatus according to the invention whether the said cleaning has been effectively performed. The air flowing through the apparatus does not need to be throttled until it flows through the nozzle, where a conical space is formed in which is a partial vacuum. This partial vacuum exerts a suction which draws the fluid to be sprayed from a container arranged on one side in a known manner.

The invention is illustrated diagrammatically, by way of example, in Figs. 1 and 2, in which

Fig. 1 is a vertical section;

Fig. 2 is a vertical section through the air inlet valve, on the line AB of Fig. 1.

The compressed air enters the appliance through the pipe 6^b, which is attached on the lower side, and then flows round a pipe which is provided with an internal screw thread and which is closed by means of the closing member 29. By removing the closing member 29 the passage 6^c, hereinafter more particularly referred to, is rendered accessible. The air next flows into the valve chamber 6^c, and to the air valve 20, which is arranged on a spindle, then into a short straight pipe which is parallel to 6^b, and then into the air passage 6^d. The above mentioned short pipe projects beyond 6^d to the outside of the appliance, being closed at this outer end by means of the closing member 28. The air from the passage 6^d arrives at the outer nozzle 8, where it is throttled, pro-

ducing at 6 a rarefaction of the air which has a suction effect. In this way the fluid which is to be sprayed is drawn from the container 3; the fluid flows through the passage 3^a surrounding the color valve needle 5, finally arriving at 6. 15 is the hand lever which controls the valves. It has been proposed, in the case of this type of apparatus, to make the front parts which form the nozzle, the back parts which form the air valve, as well as the air and color valve spindles, removable. With such apparatus, as hitherto constructed, it was not possible to have a free view through the air passage. It is, however, necessary to obtain such a view, in order to be able to clean the apparatus effectively. This is made possible by the present invention, in which the air passages are laid free by the removal of the closing members.

Claim:

A color spraying apparatus, having an air valve, a color needle valve, a spindle on which the said air valve is mounted, the axes of the said spindle and needle valve being in line with each other, an inlet passage for the compressed air perpendicular to the line containing the said axes, a valve chamber for the air valve, a pipe which is perpendicular to the line containing the said axes and which leads from the said valve chamber, an open communication between the said pipe and the valve chamber, a member closing the end of the said pipe, an air passage slightly inclined to the line containing the said axes, a nozzle, the air passage lying between the said nozzle and the rear end of the apparatus, an opening at the rear end of the apparatus in alignment with the air passage, a closing member in the said opening whereby the said air passage can be laid bare for inspection and for cleaning purposes, after the removal of the said closing members, as set forth.

In testimony whereof I have signed my name to this specification.

ALBERT KRAUTZBERGER.

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(54) **DEVICE FOR SPRAYING A COSMETIC PRODUCT**

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(76) Inventor: **Isabelle Bara, Paris (FR)**

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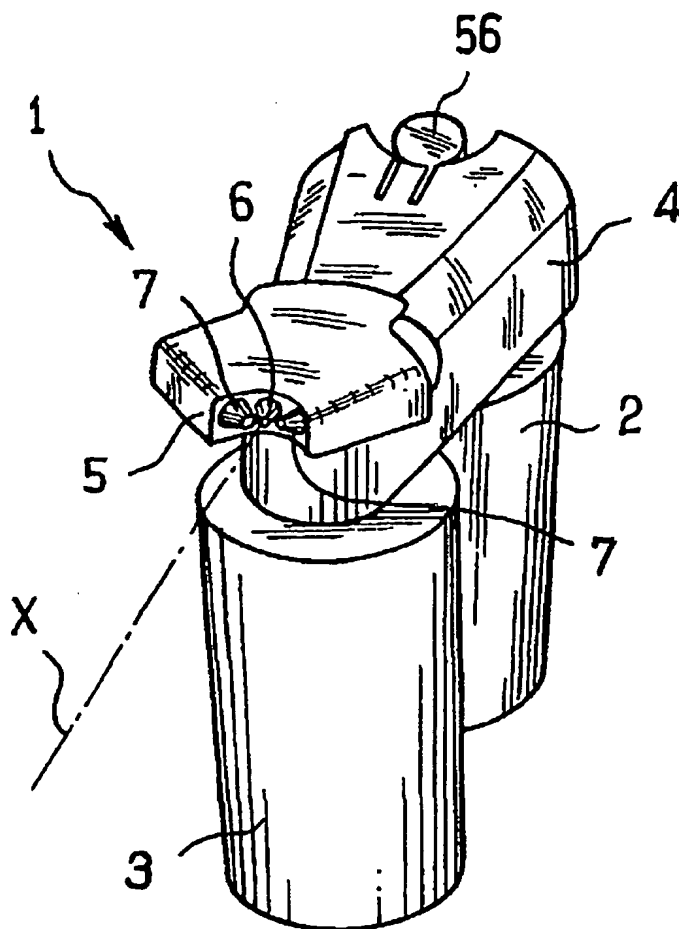
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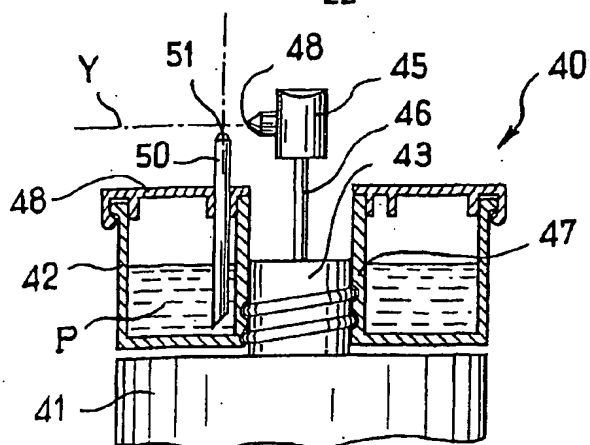
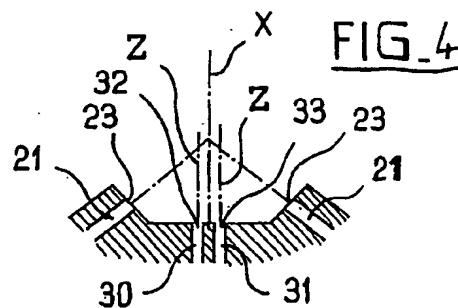
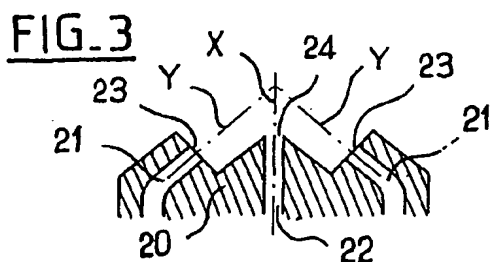
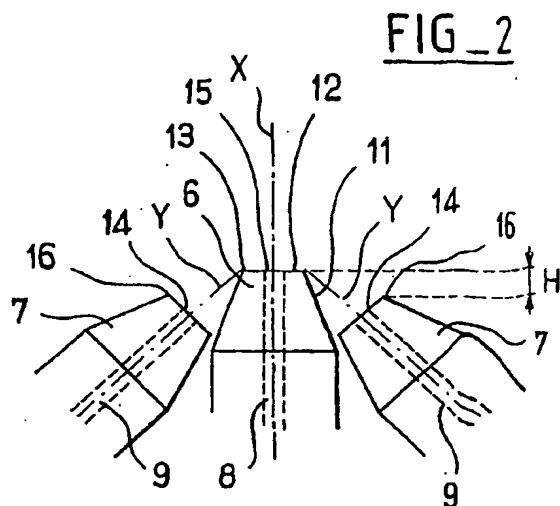
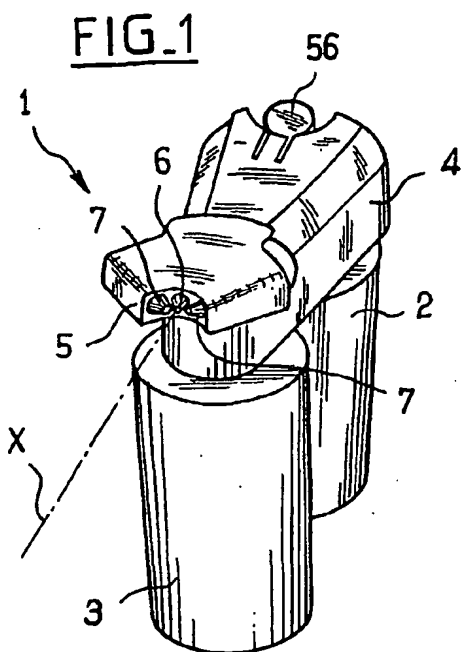
(51) Int. Cl.⁷ **A61K 9/00; A61K 7/021;
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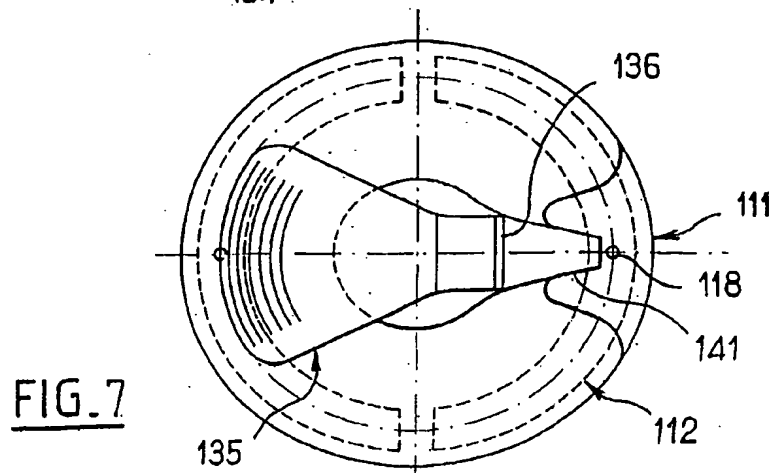
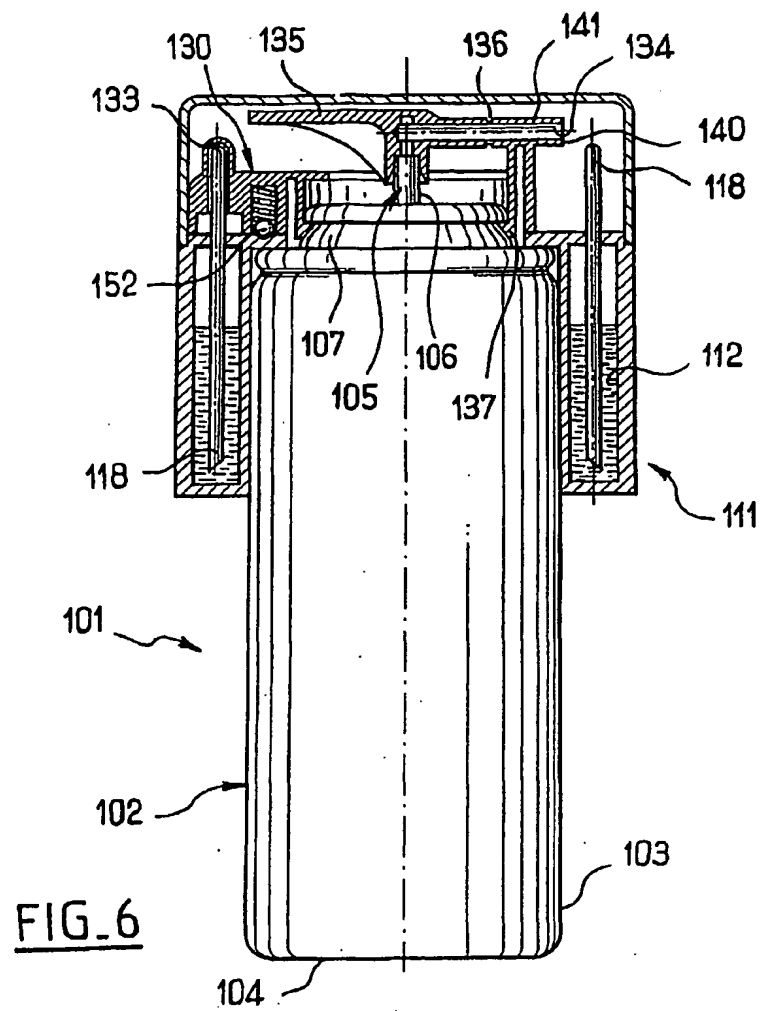
(57) **ABSTRACT**

A self-contained device of unitary structure for spraying a cosmetic substance onto a keratinous medium, in particular the skin, the device comprising a supply of substance to be sprayed and a receptacle containing a gas, together with a valve making it possible, when actuated, to spray the substance, the substance containing solid particles and at least one dispersing or jelling agent.

(21) Appl. No.: **10/203,781**
 (22) PCT Filed: **Nov. 22, 2001**
 (86) PCT No.: **PCT/FR01/03689**







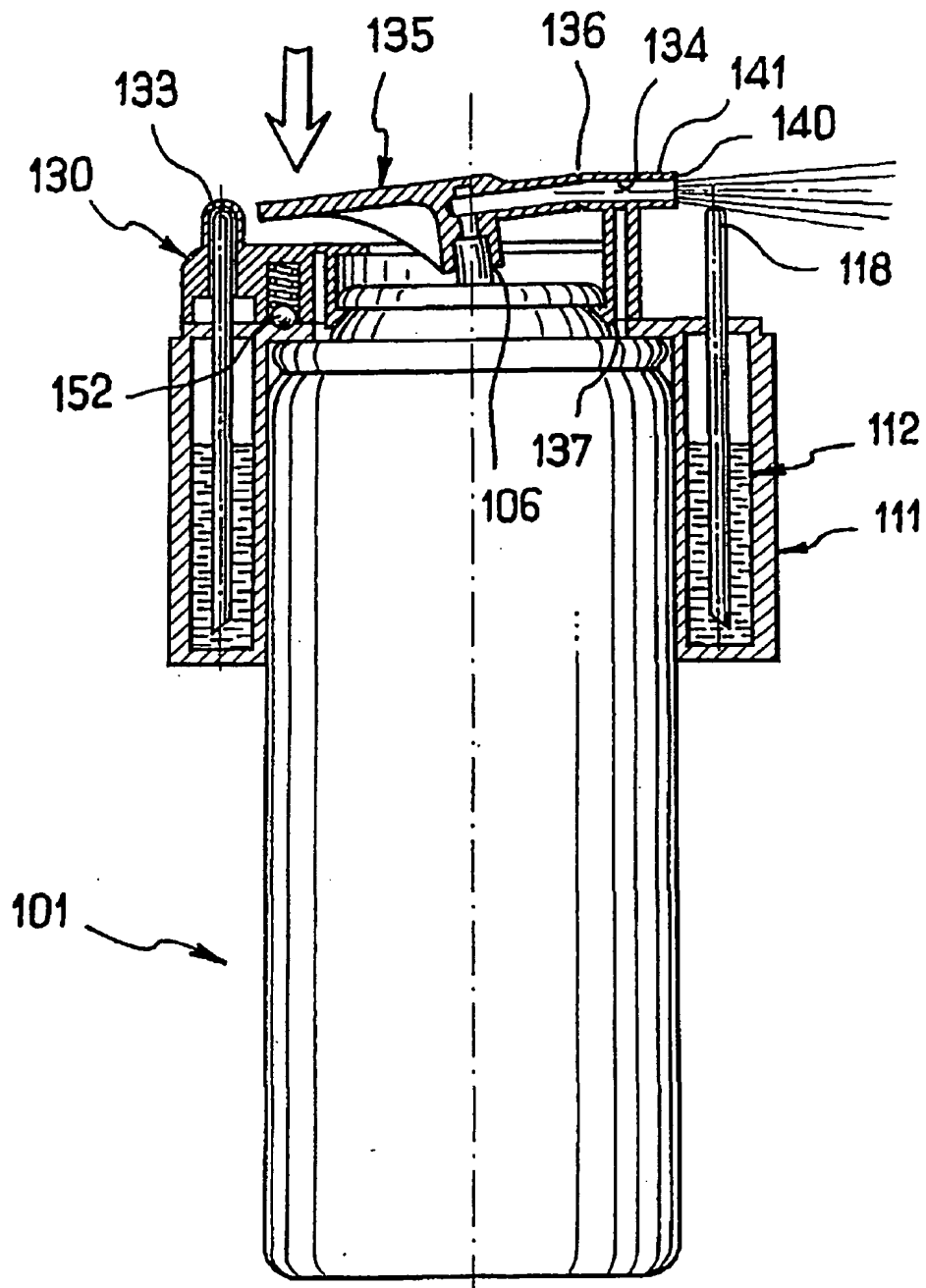


FIG. 8

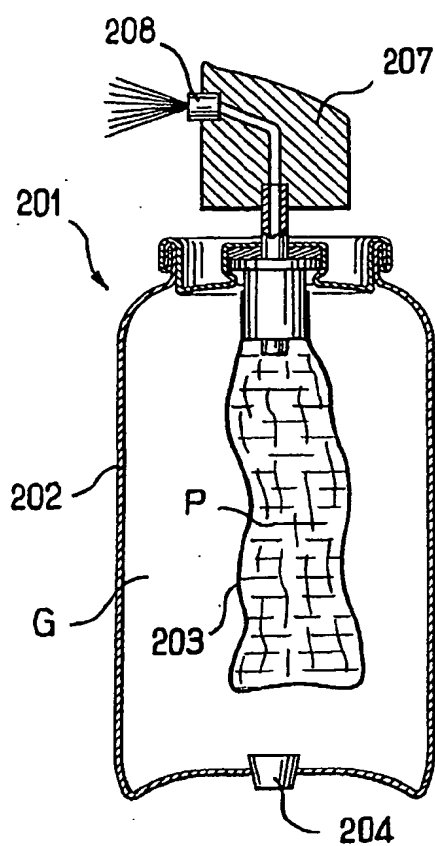


FIG. 9

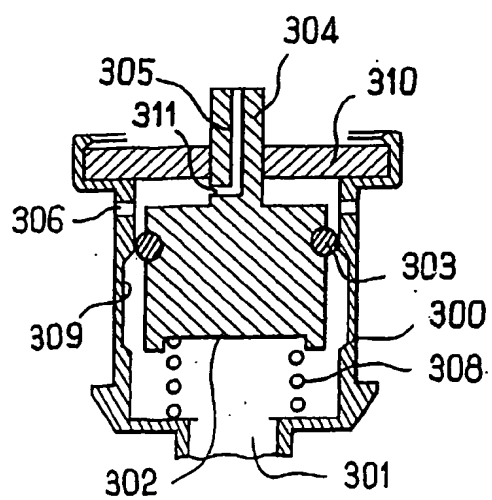


FIG. 10

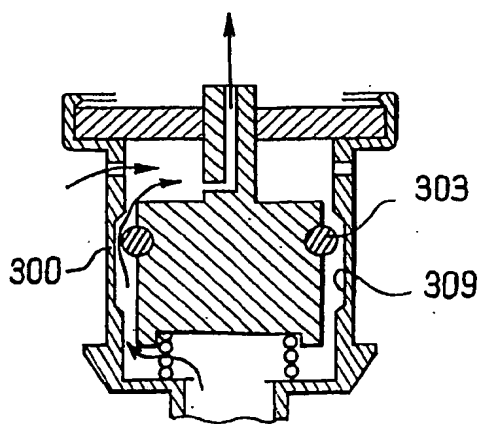


FIG. 11

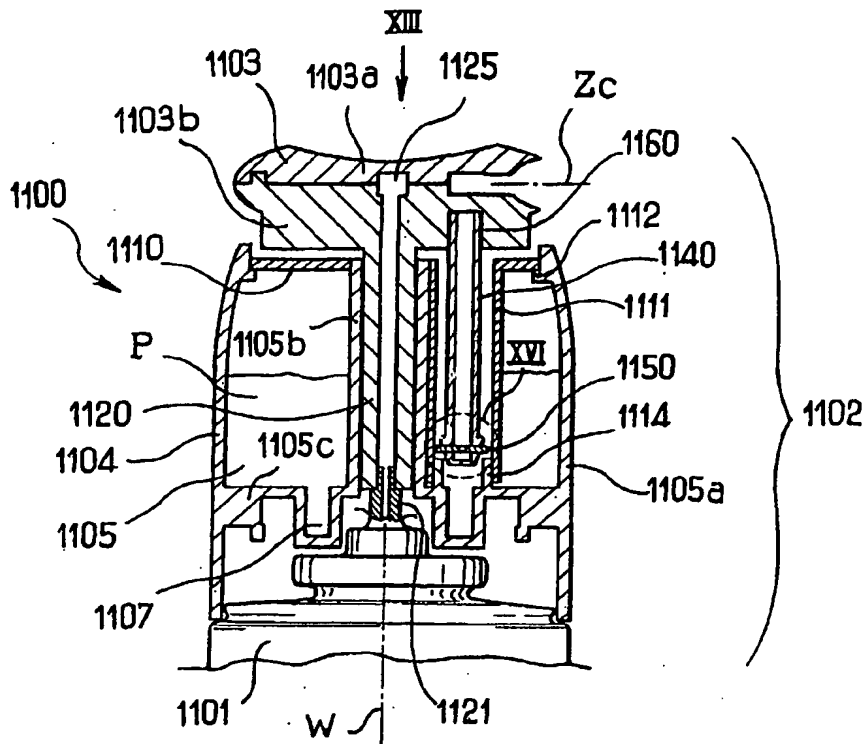


FIG. 12

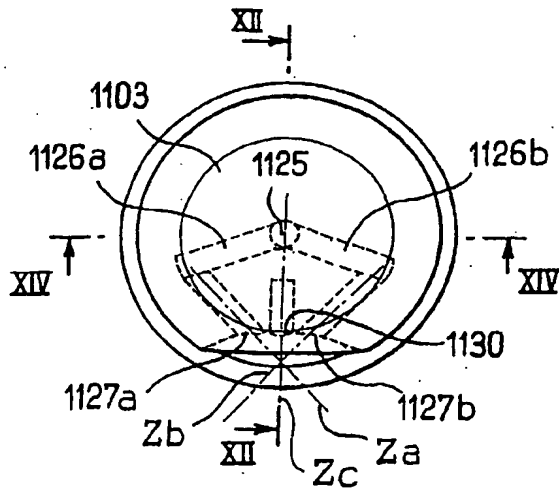


FIG. 13

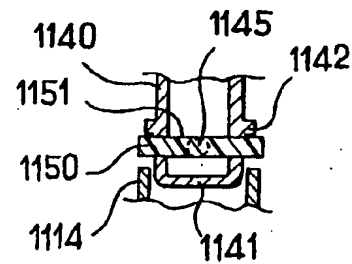


FIG. 16

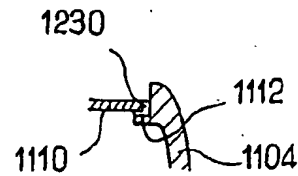
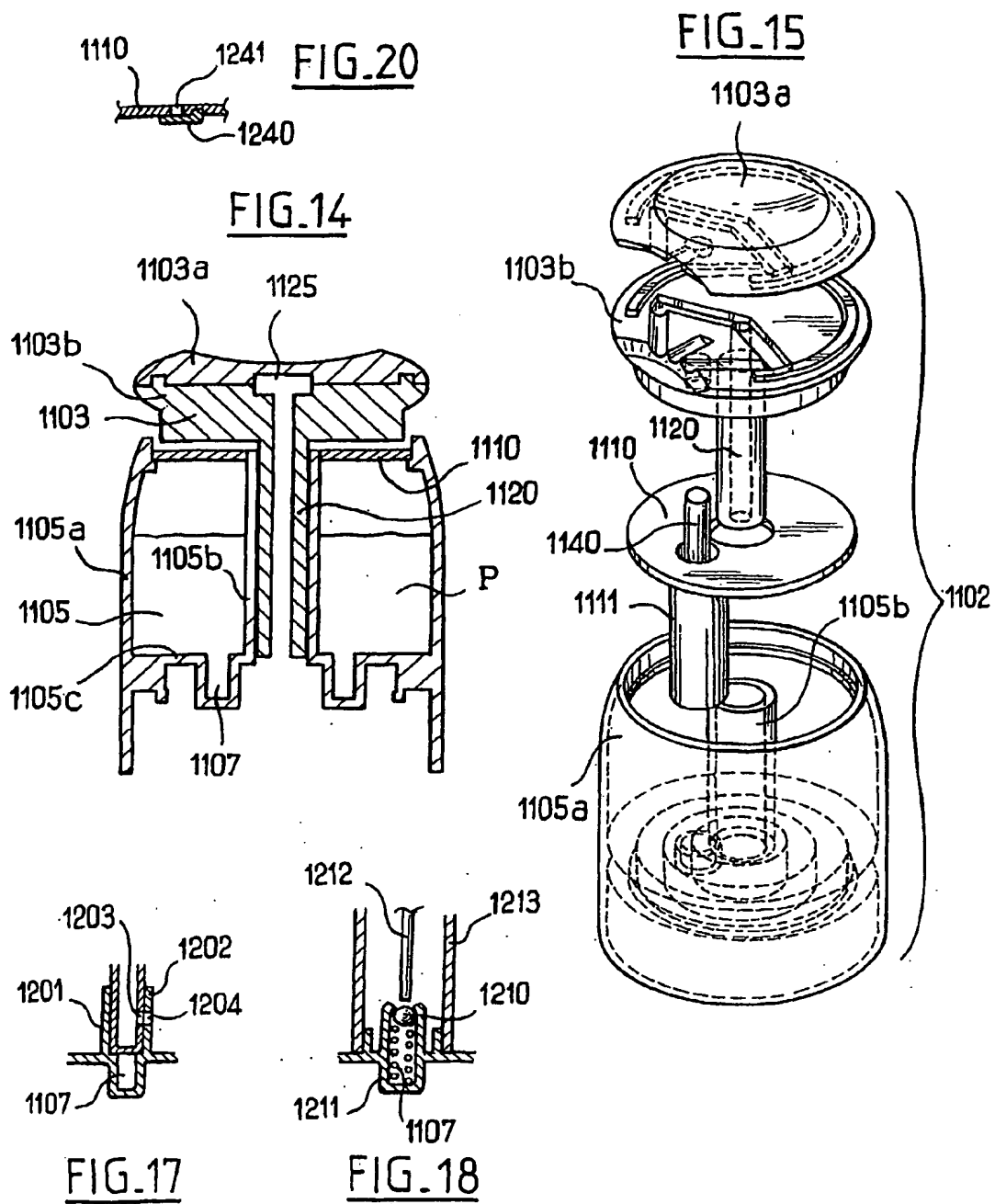


FIG. 19



DEVICE FOR SPRAYING A COSMETIC PRODUCT

[0001] The invention relates to a self-contained portable device for spraying a cosmetic onto a keratinous medium, in particular the skin, the lips, or the fingernails.

BACKGROUND OF THE INVENTION

[0002] The use of a vector gas for spraying paint has been known for a long time, in particular from U.S. Pat. No. 2,635,921. That technique has been thoroughly developed and constitutes the subject matter of numerous patent applications. As an indication, mention may be made of European patent application No. EP-A1-0 208 247 and U.S. Pat. Nos. 5,255,852 and 5,713,519.

[0003] U.S. Pat. No. 1,430,506 discloses a device which comprises a tank on which two nozzles are fixed that are connected to a compressed air inlet, the two nozzles being suitable for emitting jets of air that meet in a region situated over a substance feed orifice. Such a device requires an external source of compressed air and a feed hose.

[0004] It is well known to apply makeup by means of an air brush comprising a spray stylus connected to a cylinder of compressed vector gas, the spray stylus comprising firstly a nozzle for ejecting the vector gas and secondly a container or cup containing the substance to be sprayed, said substance being progressively sucked up through a duct in the cup by means of the suction created by the Venturi effect due to the speed of the vector gas at its outlet from the nozzle.

[0005] Airbrush type spraying may be used in particular make the boundary between zones that have been treated and zones that have not been treated less visible, to achieve blending, shading, or impressions of volume.

[0006] The hand actions involved are also different since the substance which is sprayed does not need to be spread out once it has been deposited on the keratinous medium.

[0007] The substance may thus be supplied in very hygienic manner since there is no need for contact with the fingers or with an applicator.

[0008] A device of the kind described above constitutes the subject matter of Canadian patent application CA-A-2 152 406, for example.

[0009] Similar devices are sold by DINAIR under the registered trademark BEAUTY ART and BODY ART, with the cylinder of compressed vector gas being replaced by an air compressor.

[0010] Those known devices in which the spray stylus and the force of vector gas do not constitute a self-contained structure given that they are interconnected by a hose. They are relatively bulky, and they are intended mainly for professional use. They are unsuitable for being carried about easily by a woman in her handbag, like conventional makeup accessories.

[0011] French patent application FR-A-2 781 208 discloses a self-contained portable device for spraying makeup in which the vector gas is present in liquefied form in a receptacle, with the substance to be sprayed and the vector gas being stored separately.

[0012] When making use of a vector gas that is stored in the liquefied state, the length of time the device may be used

is extended and the cooling that accompanies expansion of the vector gas contributes to producing a feeling of freshness at the time of application.

[0013] The substance may be brought into contact with the vector gas by means of a duct or by capillarity by means of a felt.

[0014] In such a self-contained portable device, spraying the substance gives rise to numerous difficulties.

[0015] Firstly, the rate at which the substance is brought into contact with the vector gas in order to be entrained thereby must not be too great since otherwise the spray runs the risk of forming droplets that are too large in size or that are irregular, nor must said rate be too small since vector gas consumption then increases rapidly and the length of time the device may continue to be used becomes insufficient.

[0016] A felt is often used to bring the substance into contact with the vector gas, since that enables the flow rate of the substance to comply fairly well with these contradictory requirements.

[0017] Nevertheless, it is not always desirable to use a felt, particularly if the substance contains a large fraction of solid particles since the felt is then liable to behave as a filter which retains the solid particles.

[0018] If the felt is replaced by a duct, either because the substance is too viscous or because it contains too large a fraction of solid particles, then there is a danger of the duct becoming clogged if its section is too small. However the section of the duct used must not be too large since that leads on the contrary to a risk of the spray having droplets that are too large or of irregular size, which spoils the quality of the makeup.

[0019] U.S. Pat. No. 4,742,963 describes another self-contained portable device in which the vector gas and the substance are stored in a common receptacle in contact with each other. It is recommended to shake the receptacle when necessary in order to homogenize the substance before using the device. In that known device, the substance to be sprayed is not sucked up by suction created by the Venturi effect, but is ejected under pressure into an ejection nozzle. The above-mentioned problems do not arise, but the substance is liable to clog the ejection nozzle, because of the absence of vector gas.

[0020] Japanese patent application JP-A-63287711 describes a cosmetic emulsion for spraying, the emulsion containing lecithin in order to make application more uniform. That application does not deal with the difficulties mentioned above that are encountered with self-contained portable devices such as the device described in application FR-A-2 781 208.

OBJECTS AND SUMMARY OF THE INVENTION

[0021] Consequently, there exists a need to benefit from a self-contained portable device capable of spraying a substance containing at least 0.3% by weight of solid particles, with good spray properties, and capable of obtaining a good makeup result, which device must have low risk of malfunctioning.

[0022] In particular, there exists specifically a need to benefit from a self-contained portable device in which the

substance is sprayed by suction produced by the Venturi effect by a vector gas, which device must be capable of operating over lengths of time that are compatible with the expectations of users and with a substance that contains a relatively high fraction of solid particles, such as a foundation makeup, without any risk of the substance feed duct becoming clogged even in the event of the device being stored for a long period and in the absence of the substance being stirred or stirred only moderately at the time of use.

[0023] The novel self-contained device of unitary structure of the invention serves in particular to satisfy this need and it comprises a supply of substance to be sprayed and a receptacle containing a vector gas, together with a valve making it possible, when actuated, to spray the substance, the substance containing solid particles and at least one dispersing or jelling agent.

[0024] Because the substance contained in the self-contained portable device contains not only solid particles but also a dispersing or a jelling agent, it is possible to ensure that the substance is sufficiently fluid to be extractable, in particular by suction by the Venturi effect by means of a vector gas, while preventing the solid particles from agglomerating in such a manner as to be liable to clog the ducts through the substance for spraying is brought into the suction zone.

[0025] The presence of a dispersing or jelling agent makes it possible in particular to avoid or to slow down sedimentation or the appearance of a new phase or cream within the substance while it is in storage, and thus encourages uniform extraction of the substance throughout operation of the device.

[0026] The dispersing or jelling agent is preferably selected in such a manner as to ensure that it does not crystallize in the medium containing it at ambient temperature and under conditions of use.

[0027] Ambient temperature covers the range of temperatures that correspond to extreme conditions of use, typically the range 10° C. to 45° C.

[0028] Jelling or dispersing agents that might crystallize in the medium at ambient temperature and that are preferably not used to implement the invention include the following:

[0029] waxes, in particular hydrocarbon waxes or silicone waxes (alkyl or alkoxydimethicone);

[0030] fatty acid and fatty alcohol esters, including cerides and sterides or glycerophosphocholine and fatty acid esters, such as phospholipids; and

[0031] amino and fatty acids, in particular ceramides.

[0032] The substance may comprise more than 0.3% solid particles for example 5% to 70% by weight of solid particles, preferably 20% to 70% and more preferably still 30% to 60% when the substance is a foundation makeup, in particular, the content of the dispersing or jelling agent preferably lying in the range 0.01% to 10% by weight, and preferably being greater than or equal to 0.1%.

[0033] The particles contained in the substance may be colored or uncolored.

[0034] In a particular embodiment of the invention, the substance contains pigments, optionally a plurality of pigments of different colors.

[0035] When the substance contains pigments of different colors, the presence of at least one dispersing or jelling agent makes it possible to reduce separation of pigments of a given color from pigments of another color, thus making it possible to obtain makeup of tone that remains constant over time.

[0036] The particles may be pigments such as, for example: iron, titanium, or zinc oxide, organic varnishes or inorganic pearlescent agents, mica, titanium, or titanium-mica, for example.

[0037] The particles may also be organic powders, in particular particles of polyamide, of polyethylene, of polyacrylate, of methyl methacrylate, of polyurethane, of cross-linked polystyrene, or mixtures thereof, for example.

[0038] The particles may also be powders of mineral origin such as talc, clay, silica, boron nitride, or mixtures thereof, or powders of vegetable origin such as starch, or powders of animal origin such as seashell powder.

[0039] The jelling agents may be modified where appropriate by organic groups in order to jell oils.

[0040] The particles may also be silicones in the form of beads of methylsesquioxane resin as sold under the trade name "TOSPEARL" by Toshiba, or cross-linked silicones, e.g. in the form of an aqueous dispersion as described in U.S. Pat. No. 5,928,660, in particular.

[0041] The particles may also come from fluorine-containing powders such as powdered PTFE (polytetrafluoroethylene).

[0042] The particles may be of nanometer size, e.g. comprising nanotitanium or nanoiron oxides, or they may be of micrometer size. The substance may comprise particles both of micrometer size and of nanometer size.

[0043] The particles may optionally be coated.

[0044] As mentioned above, the substance preferably comprises 0.01% to 10% by weight of jelling and/or dispersing agent(s) as a function of the nature of the other ingredients in the substance, so as to ensure that the viscosity of the substance is compatible with the way in which the substance is extracted from the supply thereof, in particular with the substance being extracted by being sucked out by the Venturi effect.

[0045] The dispersing and/or jelling agent(s) used may be hydrophilic or lipophilic.

[0046] As a jelling agent, it is possible to use in particular, hydrophilic jelling agents of polymeric nature such as, for example, jelling agents of the polysaccharide type, e.g. xanthan gum, gellan gum, guar gum or its derivatives, cellulose and its derivatives, jelling agents of the vinyl type, carboxyvinyl type, acrylic type, polyurethane type, mineral type jelling agents of non-polymeric nature, such as clays, e.g. Veegum® sold by Vanderbilt, optionally modified Bentone® sold by Rheox, or hydrophilic silicas.

[0047] It is possible in particular to use as lipophilic jelling agents, agents of the polymer type or of the "organo-jelling" type, i.e. in the form of non-polymeric small-sized molecules that establish interactions in such a manner as to build up lattices of the kind mentioned in the book "Specialist surfactants" by Blackie Academic and Professional, Chapter 8.

[0048] As a jelling agent of the organo-jelling type, mention may be made of 12 hydroxystearic acid, its salts and derivatives (esters or amides), amino acid amides or N-acid amino acids, amides of tricarboxylic acids, sorbitol dibenzylidene, or alditol and derivatives thereof.

[0049] As examples of lipophilic jelling polymers, mention may be made of silicone polymers or derivatives thereof (polydimethylsiloxane (PDMS) of high molecular weight, greater than 10,000), said silicone polymers optionally being linear ("gum") as contained in the product referenced Q2 1401 from Dow Corning or cross-linked, of the "resin" type, such as those contained in the product referenced KSG 6 or 16 from Shin Etsu or those known under the reference TREFIL 505 C or 506 C from Dow Corning, or indeed those known under the reference SR 5 CYC from Gransil.

[0050] It is also possible to use polymer type lipophilic jelling agents such as polymers derived from silicones or acrylic silicones.

[0051] It is also possible to use lipophilic jelling polymers such as polycondensates of polyamide type or polysaccharides having hydrophobic chains or polyurethanes.

[0052] When one or more dispersing agents are used, they should be of hydrophilic or lipophilic type and act by electrostatic repulsion or by steric stabilization.

[0053] As hydrophilic dispersing agents, mention may be made in particular of those having at least one anionic filler, e.g. carboxylic dispersants, sulfonates, terpolymers of acrylic acid, polyaspartates, derivatives of maleic acid, these dispersing agents acting mainly by electrostatic repulsion.

[0054] Among dispersions that act more by steric stabilization, mention may be made of polyvinyl pyrrolidone (PVP) type dispersants, polyoxyethylene, and polycaprolactone.

[0055] Dispersants used in oily media could be carboxylates, acrylics, hydrocarbons including a ring, e.g. styrene, or of the succinimide type.

[0056] The jelling or dispersing agents mentioned above may be used separately or in mixtures.

[0057] The substance may include at least one dispersing agent and at least one jelling agent.

[0058] In general, the supply of substance is advantageously contained in a receptacle that is sufficiently closed to enable the substance to be conserved in the device, while not in use, for a length of time in excess of at least 1 month at ambient temperature.

[0059] Advantageously, the supply of substance is contained in a removable cartridge.

[0060] In a variant, the supply of substance may be contained in a non-removable receptacle.

[0061] The viscosity of the substance preferably lies in the range 20 centipoises to 500 centipoises, i.e. in the range 20 millipascals per second (mPa/s) to 500 mPa/s, with viscosity being measured using an RM 180 rheometer from Rheometric Scientific, of the rotary type, using a suitable moving unit of "1", "2", or "3" type depending on the

fluidity of the formulation, after 10 minutes at a shear rate of 200/s, with measurements being performed at a temperature of 25° C.

[0062] The substance may further comprise any of the usual compounds conventionally used in cosmetics, in particular hydrophilic or lipophilic cosmetic active agents such as, for example, UV blocking agents (filters), or moisturizers (e.g. glycerins), care oils, antioxidants, preservatives, perfumes, an anti-foaming agents, this list not being exhaustive.

[0063] The device may include a dip tube dipping into the supply of substance.

[0064] The substance may be contained in the flexible bag placed inside a receptacle containing the gas.

[0065] In a variant, the supply of substance may be contained in a receptacle which is different from the receptacle containing the gas.

[0066] The receptacle may be fitted with a valve having at least three positions, namely: a rest position; a position enabling the substance to be dispensed together with the vector or propellant gas; and a position enabling vector gas to be dispensed on its own.

[0067] The device may have at least one substance feed duct and at least one vector gas feed duct, preferably two vector gas feed ducts, the ducts being arranged in such a manner that the vector gas leaving the vector gas feed duct generates a pressure drop suitable for sucking up the substance coming from the substance feed duct.

[0068] The device may comprise a supply of vector gas, at least one substance feed suitable for being put into fluid communication with a supply of the substance, the substance being sucked from the supply by suction established in the vicinity of said at least one substance feed by emission of the vector gas.

[0069] The device may further comprise at least one shutter suitable for interrupting fluid communication between said at least one substance feed and the supply of substance.

[0070] The conditions under which the substance is conserved in the supply of substance may thus be improved, and in particular it is possible to prevent volatile components from escaping.

[0071] It is also possible to avoid the risks of substance leaking out while the device is being carried about in a horizontal or an upside-down position, as may happen for example in a handbag.

[0072] The substance feed may comprise at least one orifice.

[0073] The device may be arranged in such a manner as to reestablish fluid communication automatically between said at least one substance feed and the substance supply whenever the vector gas is emitted. The device may thus be arranged in such a manner that fluid communication is automatically interrupted whenever vector gas emission stops.

[0074] The device may include a pushbutton suitable for acting simultaneously, whether directly or indirectly, on a vector gas dispenser valve and on the shutter so that fluid communication between the substance feed and the supply

of substance is established when the user presses on the pushbutton to deliver the vector gas.

[0075] The supply of substance may be contained, for example, in a first receptacle fixed to a second receptacle containing the vector gas. The two receptacles may also have at least one portion in common, e.g. a partition defining at least two compartments respectively containing the vector gas and the substance to be sprayed.

[0076] The receptacle containing the substance and the receptacle containing the vector gas may be in fixed relationship, neither being capable of moving relative to the other in use. By way of example this makes it possible to obtain an assembly that is relatively compact and easy to carry about, in particular in a handbag.

[0077] The receptacle containing the substance may, for example, be annular in shape so as to leave a passage, e.g. a central passage, along which a control member for a valve fitted to the receptacle containing the vector gas may extend.

[0078] The shutter may be operationally connected to at least one element actuated by moving the pushbutton of the device. Such an element may comprise a hollow rod, for example, the rod having at least one internal passage enabling the substance contained in the supply of substance to reach the substance feed.

[0079] By way of example, the shutter may comprise at least one gasket suitable for closing at least one orifice through which the substance may flow to reach said at least one substance feed, and suitable for releasing said orifice at least in part while the substance is being dispensed.

[0080] In a particular embodiment, the shutter is constituted by a gasket mounted on a hollow rod, the rod being closed at its bottom end, the gasket being capable of bearing via its top face against a shoulder of the rod. The rod is pierced by at least one substance admission orifice, for example, of a diameter that is smaller than or equal to the thickness of the gasket. The gasket is suitable for coming into abutment via its bottom face against a fixed bearing wall when the hollow rod is pushed down, so that the gasket is then compressed and disengages the admission orifice at least in part, so as to allow substance to flow towards said at least one substance feed. By way of example, the gasket may also press via its periphery against the inside surface of a duct in which the hollow rod may move axially, said duct being capable of communicating freely with the outside, in which case the gasket makes it possible to obtain leaktight closure of the gap situated between the hollow rod and the inside surface of the duct. The top end of the duct may connect to a cover closing the top of the substance containing receptacle, for example. The hollow rod may be actuated by moving the pushbutton that controls vector gas emission, for example. The inside space at the bearing wall against which the gasket may come into abutment via its bottom face may communicate with the receptacle containing the substance, e.g. via an annular channel formed in a bottom end wall of the receptacle. The above-mentioned duct may be connected in leaktight manner to the above-mentioned tubular bearing wall.

[0081] According to an aspect of the invention, the device may comprise a pushbutton made by assembling together a bottom portion and a top portion. The bottom portion may be made integrally with an actuator rod, for example, and may

extend in a passage of the receptacle containing the substance, e.g. a central passage. The control rod for the valve delivering the vector gas may be engaged in the actuator rod of the pushbutton.

[0082] The supply of substance may initially contain 5 cubic centimeters (cm^3) to 200 cm^3 of substance for example, or indeed 10 cm^3 to 100 cm^3 .

[0083] The gas may present at least one liquid phase inside the receptacle containing the vector gas.

BRIEF DESCRIPTION OF THE DRAWINGS

[0084] Other characteristics and advantages of the present invention will appear on reading non-limiting descriptions of embodiments of the invention, and on examining the accompanying drawings, in which:

[0085] FIG. 1 is a diagrammatic perspective view of a spray device constituting a first embodiment of the invention;

[0086] FIG. 2 is a fragmentary diagrammatic plan view of the spray head of FIG. 1;

[0087] FIGS. 3 and 4 are fragmentary sections showing two variant embodiments for the spray head;

[0088] FIG. 5 is a diagrammatic view partially in section of a spray device constituting a second embodiment of the invention;

[0089] FIG. 6 is a diagrammatic view partially in axial section showing a spray device comprising a third embodiment of the invention;

[0090] FIG. 7 is a plan view of the FIG. 6 device;

[0091] FIG. 8 is a view analogous to FIG. 6, showing the device while spraying substance;

[0092] FIG. 9 is a diagrammatic axial section view showing a device constituting a fourth embodiment of the invention;

[0093] FIGS. 10 and 11 are diagrammatic axial sections showing a three-position valve;

[0094] FIG. 12 is a fragmentary diagrammatic axial section on XII-XII of FIG. 13, showing another embodiment of a spray device;

[0095] FIG. 13 is a diagrammatic and fragmentary plan view as seen looking along arrow XIII in FIG. 12;

[0096] FIG. 14 is a fragmentary and diagrammatic axial section on XIV-XIV of FIG. 13;

[0097] FIG. 15 is a fragmentary diagrammatic exploded perspective view of the FIG. 12 device;

[0098] FIG. 16 is a view on a larger scale showing a detail XVI of FIG. 12;

[0099] FIGS. 17 and 18 are diagrams showing other examples of shutters;

[0100] FIG. 19 is a diagram of an example of a microleak; and

[0101] FIG. 20 is a diagram of an example of an air intake valve.

MORE DETAILED DESCRIPTION

[0102] In the following description, including the claims, the expression "comprising a" must be understood as meaning "comprising at least one".

[0103] FIG. 1 shows a spray device 1 constituting a first embodiment of the invention, comprising a first receptacle 2 containing a supply of vector gas and a second receptacle 3 containing a liquid to be sprayed.

[0104] In this example, the vector gas is present in the liquefied state in the receptacle 2 and its nature is selected in such a manner as to be compatible with spraying onto a keratinous medium such as the skin, the fingernails, or the hair.

[0105] By way of example, the vector gas is compressed gas, in particular air, butane, isobutane, isopropane, or a fluorine-containing compound.

[0106] The vector gas can be present in the liquefied state.

[0107] Naturally, it would not go beyond the ambit of the present invention for some other vector gas to be used, for example compressed nitrogen.

[0108] In accordance with the invention, the substance contained in the receptacle contains at least 0.3% by weight of solid particles and at least one dispersing or jelling agent.

[0109] Reference can usefully be made to the beginning of the description where numerous examples of compounds are given that are suitable for being present in the substance.

[0110] In addition to the receptacles 2 and 3, the spray device 1 comprises a dispenser assembly 4 comprising a spray head 5 and an actuator member 56 such as a pushbutton, actuating a control valve that is not visible in the drawing.

[0111] The spray head 5 has a central nozzle 6 for dispensing the liquid contained in the receptacle 3 and two lateral nozzles 7 for emitting the vector gas.

[0112] The nozzles 6 and 7 are shown in greater detail in FIG. 2.

[0113] The nozzle 6 has an internal passage 8 on an axis X, which axis coincides with the spray axis.

[0114] Each of the nozzles 7 has an internal passage 9 on an axis Y, the axes Y each making an angle of 45° with the axis X, and being contained in the same plane as the axis X.

[0115] The passage 8 is permanently in communication with the substance contained in the receptacle 3, the passage being extended into the inside of the receptacle by a dip tube, and the passages 9 communicate with the vector gas contained in the receptacle 2 via the valve actuated by the pushbutton 56.

[0116] The outlet orifices 14 for the vector gas have a diameter of 0.4 mm, for example, and the outlet orifice 15 for the liquid substance has a diameter of 0.9 mm, for example.

[0117] When the user presses on the pushbutton 56, the vector gas flows along the passages 9 and expands on leaving the nozzles 7, thus producing a pressure drop by the Venturi effect in front of the nozzle 6, thereby sucking substance into the passage 8.

[0118] Because of the way the axes Y are oriented, the vector gas jet emitted by the nozzles 7 meet each other, thus making it possible to obtain a spray having droplet characteristics and overall spray shapes that are compatible with obtaining satisfactory makeup results.

[0119] In the particular configuration shown in FIG. 2, the nozzle 6 also acts as a deflector-forming element and deflects a fraction of each of the vector gas jets emitted by the nozzles 7 in a forward direction.

[0120] In other words, at least a part of each vector gas jet strikes the nozzle 6 and then takes up a direction that is closer to the direction of the spray axis.

[0121] It will be observed that the nozzle 6 presents a hollow frustoconical portion 11 whose generator line makes an angle with the spray axis X which is smaller than the angle made by each of the axes Y with the axis X.

[0122] In the example shown in FIG. 2, the nozzle 6 has an end face 12 which is plane and perpendicular to the axis X, and the axis Y of each nozzle 7 intersects the circular edge 13 of the end face 12.

[0123] The distance H between the end face 12 of the nozzle 6 and the edge 16 of the front face of each nozzle 7 is about 1.7 mm, for example.

[0124] In the embodiment of FIGS. 1 and 2, the nozzles 6 and 7 are constituted by separate fittings.

[0125] Naturally, it would not go beyond the ambit of the present invention for the outlet orifices for the substance and for the vector gas to be constituted by the ends of internal passages made in a single piece, as shown in FIG. 3.

[0126] In FIG. 3, there can be seen a spray bead 20 pierced by lateral passages 21 communicating with the supply of vector gas and a central passage 22 communicating with the supply of liquid substance and opening to the outside via an orifice 24 on the axis X.

[0127] The passages 21 open to the outside through distinct orifices 23, on axes Y that intersect the axis X.

[0128] In the embodiment of FIG. 3, the vector gas jet emitted by the passages 21 strike each other directly without prior deflection by a deflector-forming element such as the above-mentioned described nozzle 6.

[0129] The invention is not limited to dispensing a single liquid substance, and without going beyond the ambit of the present invention it is possible to dispense a mixture of at least two substances, one of the substances being contained in the receptacle containing the vector gas and being entrained therewith, for example.

[0130] It is also possible for each of the two substances to be contained in a respective distinct receptacle, both receptacles being different from the receptacle containing the propellant gas.

[0131] Under such circumstances, the liquid substances can be fed via two separate paths as shown in FIG. 4.

[0132] In FIG. 4, the passage 22 is replaced by two passages 30 and 31 each in communication with a respective one of the two supplies of different substances, e.g. two substances that need to be packaged separately and mixed together extemporaneously.

[0133] The axes Z of the orifices 32 and 33 of the passages 30 and 31 are parallel to the spray axis X.

[0134] The spray axis X can be horizontal or it can have some other orientation, depending on how the spray device is to be handled and on the location of the zone that is to be treated.

[0135] The spray device can be designed to operate head-up or head-down.

[0136] The substance can be contained in a removable receptacle, as described below with reference to FIG. 5.

[0137] This figure shows a device 40 comprising a receptacle 41 containing the vector gas and a receptacle 42 containing a supply of substance P.

[0138] In accordance with the invention, this substance P comprises solid particles and at least one jelling or dispersing agent.

[0139] The receptacle 41 is provided with a threaded neck 43.

[0140] A spray head 45 is fixed on the hollow control rod 46 of a valve forming part of the receptacle 41.

[0141] The receptacle 42 has an annular assembly skirt 47 arranged to screw onto the threaded neck 43.

[0142] The receptacle 42 is closed in leakproof manner on top by a cover 48.

[0143] The pushbutton 45 presents two vector gas dispensing orifices 48 that are at an angle to each other, having axes Y that intersect each other substantially vertically over a member 50 for feeding the liquid substance and constituted in the example of FIG. 5 by a tube that dips down to the bottom of the receptacle 42.

[0144] The tube 50 passes in leaktight manner through the cover 48.

[0145] The top end of the tube 50 is provided with an orifice 51 enabling the liquid substance to exit under the effect of the suction created by the vector gas being ejected through the orifices 48 when the user presses on the pushbutton 45.

[0146] Having the receptacle 42 fixed removably on the receptacle 41 allows the user to reconstitute the supply of liquid substance once it has been used up, merely by replacing the empty receptacle 42 with a new receptacle full of substance.

[0147] Having the receptacle 42 mounted removably on the receptacle 41 also enables the user to select a particular receptacle 42 from a plurality of receptacles containing different substances, e.g. substances of different colors.

[0148] Thus, the user can use a single receptacle 41 containing the vector gas in association with a receptacle selected from a plurality of receptacles containing different substances.

[0149] It should be observed that the receptacle 42 does not have any air intake orifice other than the passage inside the tube 50.

[0150] When the substance is dispensed on actuating the pushbutton 45, suction is established inside the receptacle 42, and when dispensing stops, the return to equilibrium

pressure inside the receptacle 42 is accompanied by the substance within the tube 50 moving downwards, thus performing a degree of self-cleaning of the tube 50 and limiting the risk of the tube becoming clogged.

[0151] The device 101 shown in FIGS. 6 to 8 is described in detail in French patent application FR-A-2 781 208.

[0152] This device 101 comprises a receptacle 102 containing pressurized gas, in particular air. The receptacle 102 is constituted by a can comprising a body 103 having one end closed by a bottom 104. Its end remote from its bottom has a valve 105 mounted thereon, which valve has an emerging rod 106 of the type that is actuated by being pressed down. The valve 105 is carried by a cup 107 fixed on the receptacle 102 by crimping. The valve 105 is itself mounted to the cup 107 by crimping.

[0153] An annular tank-carrier member 111 is mounted free to rotate on the receptacle 102 and it defines two tanks 112 each containing a cosmetic for spraying.

[0154] A respective duct 118 dips into each tank.

[0155] A hoop 130 is snap-fastened onto the receptacle 102.

[0156] This hoop 130 is prevented from rotating relative to the receptacle, in particular by being a tight-fit, and it prevents the tank carrier 11 from moving axially.

[0157] The hoop 130 has an annular channel 133 suitable for covering the ducts 118 of the tanks 112 so as to isolate them from the outside.

[0158] A vector gas dispensing passage 134 is formed inside a projection 141 and opens out laterally through an outlet orifice 140.

[0159] The passage 134 is connected to a pushbutton 135 via a film hinge 136 extending perpendicularly to the axis of the receptacle 102.

[0160] The outlet orifice 140 is disposed in such a manner as to be capable of being situated as close as possible to the top end of a duct 118. By way of example, this distance can be about 1 mm.

[0161] The projection 141 is snap-fastened directly onto the receptacle 102 via a catch 137.

[0162] The tank carrier 111 is accurately positioned relative to the outlet orifice 140 for the vector gas by means of an indexing mechanism comprising a ball 152 and a spring, and providing as many indexed positions as there are tanks 112.

[0163] Advantageously, the indexed positioning mechanism provides four indexed positions that are spaced apart at 90° intervals: two first positions that are spaced apart by 180° bring the outlet orifice 140 into register with one or other of the ducts 118, and two intermediate or storage positions in which the outlet orifice 140 is not in register with either of the ducts 118, the two intermediate positions being at 90° relative to the first two positions.

[0164] Each duct 118 has a bottom end 117 dipping into the bottom of the corresponding tank 112, while its other end emerges from the tank 112.

[0165] The passage 134 extends substantially perpendicularly to the axis of each duct 118.

[0166] The substance contained in the selected tank 112 whose duct 118 is situated in the vicinity of the orifice 140 is sprayed when the user presses on the pushbutton 135, as shown in FIG. 8.

[0167] In the examples described with reference to FIGS. 1 to 8, the substance is sprayed by means of the suction created by the Venturi effect by the vector gas.

[0168] Conclusive tests have been performed with the device of FIGS. 1 and 2 using a non-oily foundation makeup having the following composition:

BY 29-119 (cross-linked silicone in aqueous dispersion from Dow Corning Toray)	40%
Pigments (iron oxide and titanium dioxide) (solid particles)	7%
Propylene glycol	7%
Glycerin	4%
Carboxymethyl cellulose (jelling agent)	0.1%
Starch powder (solid particles)	2.5%
Hydrophilic modified talc (solid particles)	2.5%
Preservative	q.s.
Water	q.s.p. 100%

[0169] To prepare this foundation makeup, the pigments are dispersed in the propylene glycol, the glycerin, and a jell is made with the carboxymethyl cellulose, the water, and the preservative.

[0170] The jell is stirred moderately while cold (about 25° C.) for 10 minutes.

[0171] The solid particles are dispersed therein, i.e. the BY 29-119 compound, the talc, and the starch while still cold, and the mixture is stirred for 10 minutes.

[0172] This provides a foundation that is very fluid, that is stable over time under ordinary conditions of conservation, and in particular for 2 months at 45° C.

[0173] Its viscosity is 50 centipoises, measured under the conditions described above.

[0174] No clogging of the central nozzle 6 was observed in operation.

[0175] Another example of a composition, suitable for body makeup, is as follows:

Pigments (solid particles)	7%
Pearlescent agents (solid particles)	3%
Propylene glycol	2.65%
Xanthan (polysaccharide type jelling agent)	0.5%
Pigmented dispersing agents: ARLANTONE 3315 sold by Uniqema (acrylate copolymer and propylene glycol at 40% in a water and propylene mixture (50/50), and sodium salt)	0.18%
BYK-019	0.06%
Dimethicone copolyol sold by BYK-CERA in dipropylene glycol monomethyl ether (anti- foaming agent)	
Water	q.s.p. 100%

[0176] Naturally, the invention is not limited to the embodiments described.

[0177] In particular, although it is particularly advantageous to use a dispersing agent or a jelling agent in the substance containing solid particles whenever the substance is to be sprayed by means of a self-contained portable device such as any one of those described with reference to FIGS. 1 to 8, the presence of a jelling or dispersing agent in the substance also turns out to be advantageous when the substance is sprayed by being delivered under pressure into a nozzle, with the substance optionally being mixed with a propellant gas.

[0178] By way of example, FIG. 9 shows a device 201 comprising a receptacle 202 of the aerosol can type, the receptacle containing a bag 203 containing the substance P to be dispensed, and the space outside the bag 203 but inside the receptacle 202 is filled with a gas G, e.g. compressed air.

[0179] The bottom of the aerosol can 202 is fitted with a valve 204 enabling it to be refilled with compressed air, and the top of the receptacle 202 includes a valve 205 suitable for dispensing the substance P contained in the bag 203.

[0180] The valve 205 has a control rod with a pushbutton 207 carrying a nozzle 208 mounted thereon.

[0181] The nozzle 208 can present numerous configurations and it is shown diagrammatically only in order to ensure that the drawing is clear.

[0182] When the user presses on the pushbutton 207 and causes the control rod to move downwards, the substance P contained in the bag 203 is delivered under pressure to the nozzle 208, preferably being mixed with gas.

[0183] It would not go beyond the ambit of the present invention if the substance were to be sprayed without being mixed with gas.

[0184] When the substance is sprayed while mixed with propellant gas, it is possible, for example, to use a valve having at least three positions, as shown diagrammatically in FIGS. 10 and 11, where such a valve is described in great detail in European patent application EP-0 709 305.

[0185] This valve comprises a body 300 communicating with the supply of substance at its bottom end via an orifice 301.

[0186] A member 302 carrying a sealing ring 303 is movable inside the body 300 against drive from a spring 308.

[0187] The member 302 is formed integrally with the control rod 304 of the valve, and is provided with a passage 305 to deliver the substance or the propellant gas.

[0188] The passage 305 opens out near the bottom through a lateral orifice 311 which is closed by a gasket 310 when the valve is at rest.

[0189] The body 300 is provided with an orifice 306 for admitting propellant gas near the top of the body.

[0190] The bag containing the substance is fixed to the body 300 without closing the orifice 306.

[0191] The member 302 carries an O-ring 303.

[0192] An annular groove 309 is formed in the inside surface of the body 300.

[0193] At rest, the O-ring 303 bears against the inside surface of the body 300 above the annular groove 309 so the duct 305 communicates with the inside of the receptacle only through the gas intake orifice 306.

[0194] When the control rod 304 is pushed down over a first fraction of its downward stroke, the O-ring 303 continues to bear in leaktight manner against the inside surface of the body 300 while the orifice 311 opens out beneath the gasket 310, thus enabling only propellant gas to pass through the orifice 306, as shown in FIG. 10.

[0195] When the control rod 304 is pushed further down, the O-ring 303 reaches the groove 309 and ceases to press against the inside surface of the body 300, thus allowing both substance and propellant gas to pass simultaneously, as shown in FIG. 11.

[0196] The position of FIG. 10 can be used to purge the substance contained in the dispenser circuit prior to returning the valve to its rest position.

[0197] The spray device 1100 shown in FIG. 12 comprises a pressurized receptacle 1101 containing a vector gas in liquefied form, e.g. butane, isopropane, isobutane, or a fluorinated compound, and a dispenser assembly 1102 comprising a pushbutton 1103 and a receptacle 1104 containing a substance P as described above.

[0198] In the example described, the receptacle 1104 has a cavity 1105 that is generally annular in shape about an axis W, said cavity 1105 containing the substance P being defined radially on the outside by a first tubular wall 1105a and radially on the inside by a second tubular wall 1105b. The walls 1105a and 1105b are united at the bottom by a bottom end wall 1105c which includes an annular channel 1107 about the axis W, whose function is explained below.

[0199] The top of the cavity 1105 is closed by a cover 1110 with a duct 1111 having its axis parallel to the axis W being connected to the bottom face of the cover. The cover 1110 can bear against a shoulder 1112 formed at the top end of the wall 1105a.

[0200] The duct 1111 extends over substantially the entire height of the cavity 1105 and its bottom end is assembled to a wall 1114 which projects upwards from the bottom wall 1105c vertically over the channel 1107. The duct 1111 can be assembled to the wall 1114 by engaging one within the other, for example. The above-mentioned wall 1114 can be continuous or discontinuous, and for example it can be constituted by studs.

[0201] The duct 1111 and the cover 1110 can be formed integrally, for example.

[0202] The pushbutton 1103 is made, for example, by assembling together a top portion 1103a and a bottom portion 1103b. In the example shown, the bottom wall is formed integrally with a hollow rod 1120 for actuating a valve of the pressurized receptacle 1101, the rod being capable of sliding inside the wall 1105b.

[0203] This valve can itself have a hollow control rod 1121 engaged in leaktight manner in the bottom end of the rod 1120, and bearing via a shoulder against the bottom end face of the rod 1120.

[0204] The pushbutton 1103 can be moved along the axis W to act on the control rod 1121, thus causing the vector gas

to flow along the duct inside the rod 1120 so as to reach a cavity 1125 which is in communication, as can be seen in FIG. 14, with two internal ducts 1126a and 1126b opening to the outside of the pushbutton via vector gas outlet orifices 1127a and 1127b. The orifices 1127a and 1127b have axes Za and Zb that are substantially perpendicular to each other, for example, each being at an angle of about 45° relative to the spray direction, for example.

[0205] The pushbutton 1103 also has a substance feed orifice 1130 having an axis Zc which coincides with the spray direction, for example. The orifice 1130 communicates with the inside of a hollow rod 1140, for example, which rod is closed at its bottom end by a wall 1141, as can be seen in FIG. 16, and on which a shutter-forming annular gasket 1150 is engaged, the gasket 1150 being made of elastomer, for example.

[0206] In the example shown, the gasket 1150 bears via its plane top face 1151 against an annular rib 1142 of the rod 1140. The rod has at least one substance admission orifice 1145 whose diameter is less than or equal to the nominal thickness of the gasket 1150 as measured along the axis of the rod 1140. The orifice 1145 is positioned in such a manner that the gasket 1150, when bearing at rest against the rib 1142, covers the orifice 1145 completely and prevents the substance P contained in the cavity 1105 from penetrating via the orifice 1145 into the rod 1140.

[0207] By way of example, the rod 1140 is fixed via its top end in a housing 1160 of the pushbutton 1103 and can move together with the rod 1120 when the user presses on the pushbutton 1103. When the rod 1140 is pushed down, the gasket 1150 is compressed between the wall 1141 and the rib 1142 with such compression having the effect of reducing its thickness and releasing the orifice 1145, at least in part, so that the substance contained in the cavity 1105 can flow through the orifice 1145, up the rod 1140, and reach the substance feed orifice 1130.

[0208] When the pushbutton 1103 is released, the rod 1140 rises together with the pushbutton so the gasket 1150 can return to a thickness which is sufficient for closing the orifice 1145 because of the gasket's shape memory.

[0209] The device 1100 operates as follows. To spray substance P, the user presses on the pushbutton 1103, thereby pushing down the rod 1121 of the valve on the receptacle and causing vector gas to be emitted into the passage inside the rod 1120. The vector gas flows via the duct 1126a and 1126b so as to leave via the orifices 1127a and 1127b, thereby establishing suction in front of the substance feed orifice 1130 by the Venturi effect. pushing down the pushbutton 1103 also has the effect of moving the rod 1140 so as to compress the gasket 1150 as explained above. The orifice 1145 is then released at least in part and substance P contained in the cavity 1105 can rise up the passage inside the rod 1140 and reach the orifice 1130 due to the effect of the above-mentioned suction. The substance is then sprayed along the direction of the axis Zc so long as the user continues to press on the pushbutton 1103. When the pushbutton is released, it can rise back into its rest position because the control rod 1121 is returned into its initial position by resilient means specific to the receptacle 1101, and also because the gasket 1150 has its own elasticity. By returning to its initial shape, the gasket closes the orifice 1145 so that if ever the device 1100 is carried about in a

horizontal or an upside-down position, the substance P remains contained inside the cavity 1105 and does not run any risk of leaking out through the substance feed orifice 1130.

[0210] By way of example, the receptacle 1104 can be secured removably to the receptacle containing the vector gas, so as to make it possible, where appropriate, to change receptacle 1104 when the supply of substance is used up. This can also enable the receptacle 1101 to be replaced, or enable different substances to be sprayed in succession using a single receptacle 1101.

[0211] In the embodiment corresponding to FIGS. 12 to 17, the substance feed is constituted by the end of a duct formed in the pushbutton, however it would not go beyond the ambit of the present invention for the substance feed to comprise a material capable of absorbing the substance by capillarity, e.g. a wick, a felt, or a sintered material.

[0212] It is also possible to use a plurality of supplies of different substances mounted in respective chambers of a rotary cylinder, in a manner similar to that described in French patent application FR-A-2 781 208, whose content is incorporated by reference.

[0213] Naturally, the invention is not limited to the embodiments described above, and in general, the above-described shutter can be replaced by any suitable shutter means, e.g. shutter means as shown in FIG. 17 comprising two coaxial walls 1201 and 1202 that are movable relative to each other and that constitute a shutter.

[0214] By way of example, the inner wall 1202 can be formed by a hollow rod secured to the pushbutton and closed at its bottom end. The substance can rise inside said rod when suction is established by emitting the vector gas.

[0215] The outer wall 1201 is stationary and it is suitable for closing an orifice 1203 through the wall 1202 when the pushbutton is at rest. The wall 1202 has an orifice 1204 suitable for coming into register with the orifice 1103 when the pushbutton is pressed down, thereby at least partially releasing the orifice 1203 so as to allow the substance to reach the substance feed.

[0216] A check valve, e.g. in the form of a ball, suitable for being opened by moving the pushbutton could also be used, as shown in FIG. 18. Such a check valve can occupy a closed position when the pushbutton is released by the user. In the example shown, the check valve has a shutter-forming ball 1210 urged into a shut position by a spring 1211. An actuator rod 1212 is arranged to be moved downwards when the pushbutton is pushed down. The substance can then flow via a duct 1213 to reach the zone where the suction is established, in order to be sprayed.

[0217] In variant embodiments, the annular channel 1107 could be omitted, e.g. if the substance is allowed to reach the space inside the wall 1114, e.g. through openings formed in said wall and in the bottom end of the duct 1111.

[0218] It would not go beyond the ambit of the invention for the suction created by emitting the vector gas to be produced through a single orifice.

[0219] The control rod 1121 for the receptacle containing the vector gas could also cause the vector gas to be dis-

pensed by being tilted relative to the axis W, providing the pushbutton is designed accordingly.

[0220] The receptacle 1104 can be made without air intake or with air intake, in particular if prolonged use is envisaged.

[0221] To enable air to be taken in, a microleak 1230 can be made through the cover 1110, for example, as shown in FIG. 19, or between the cover and the wall 1105a of the receptacle 1104, corresponding to the example shown in FIG. 20. Such a microleak is made so as to prevent the substance from passing therethrough, in particular when the device is lying on its side, but to enable air to pass therethrough.

[0222] By way of example, a valve 1240 can also be provided that is suitable for closing an air intake orifice 1241, as shown in FIG. 21. The valve 1240 opens in the event of reduced pressure inside the receptacle containing the substance and otherwise closes the orifice 1241.

[0223] By way of example, the valve 1240 can be overmolded on the cover 1110, but it could also be made in some other way without going beyond the ambit of the present invention.

1. A self-contained device of unitary structure for spraying a cosmetic substance onto a keratinous medium, in particular the skin, the device comprising a supply of substance to be sprayed and a receptacle containing a gas, together with a valve making it possible, when actuated, to spray the substance, the substance containing solid particles and at least one dispersing or jelling agent.

2. A device according to claim 1, wherein the dispersing or jelling agent is selected so that it does not crystallize at ambient temperature in the medium containing it.

3. A device according to claim 2, wherein the dispersing or jelling agent is selected from agents not included in the following list:

waxes, in particular hydrocarbon waxes or silicone waxes (alkyl or alkoxydimethicone);

fatty acid and fatty alcohol esters, including cerides and sterides or glycerophosphocholine and fatty acid esters, such as phospholipids; and

amino and fatty acids, in particular ceramides.

4. A device according to claim 1, wherein the substance comprises more than 3% by weight of solid particles, preferably 5% to 70% by weight of solid particles, preferably 20% to 70%, more preferably still 30% to 60%, particularly when the substance is a foundation makeup, and wherein the dispersing or jelling agent content lies in the range 0.01% to 10% by weight, and is preferably greater than or equal to 0.1%.

5. A device according to claim 1, wherein the substance includes pigments.

6. A device according to claim 5, wherein the pigments are selected from the following list: iron, titanium, and zinc oxide, organic varnishes, inorganic pearlescent agents, in particular mica, titanium, or titanium-mica, and mixtures thereof.

7. A device according to claim 1, wherein the substance contains particles selected from the following list: organic powders, in particular particles of polyamide, of polyacrylate, of methyl methacrylate, of polyurethane, of polyethylene, of cross-linked polystyrene, and mixtures thereof, pow-

ders of mineral origin such as talc, clay, silica, boron nitride and mixtures thereof, powders of vegetable origin such as starch, powders of animal origin such as seashell powder, silicones in the form of beads of methylsesquioxane resin, fluorine-containing powders such as PTFE powders, and mixtures thereof.

8. A device according to claim 1, wherein the particles are of micrometer size (individual grain size).

9. A device according to claim 1, wherein the particles are of nanometer size.

10. A device according to claim 1, wherein the dispersing and/or jelling agent(s) used is/are hydrophilic.

11. A device according to claim 1, wherein the dispersing and/or jelling agent(s) used is/are lipophilic.

12. A device according to claim 10, wherein the substance contains at least one hydrophilic jelling agent selected from: hydrophilic jelling agents of polymeric nature such as jelling agents of polysaccharide type, in particular xanthan gum, gellan gum, guar gum, and derivatives thereof, cellulose and derivatives thereof, jelling agents of vinyl type, carboxyvinyl type, acrylic type, polyurethane, mineral type jelling agents of non-polymeric nature such as clays, in particular Veegum®, optionally modified Bentone®, and hydrophilic silicas, and mixtures thereof.

13. A device according to claim 11, wherein the substance contains a lipophilic jelling agent selected from the following lipophilic jelling agents: polymer type jelling agents or "organo-jelling" type jelling agents, linear or cross-linked silicone polymers and derivatives thereof, polymers derived from silicones, acrylic silicones, polyamide type polycondensates, polysaccharides having hydrophobic chains, and polyurethanes, and mixtures thereof.

14. A device according to claim 1, wherein the substance contains inorganic jelling agents optionally modified by organic groups in order to jell oils.

15. A device according to claim 10, wherein the substance contains at least one dispersing agent and at least one jelling agent.

16. A device according to claim 15, wherein the substance contains at least one hydrophilic dispersing agent selected from the following hydrophilic dispersing agents: dispersing agents having at least one anionic filler, in particular carboxylic dispersing agents, sulfonates, terpolymers of acrylic acid, polyaspartates, derivatives of maleic acid, and mixtures thereof.

17. A device according to claim 1, wherein the substance contains at least one lipophilic dispersing agent selected from the following lipophilic dispersing agents: carboxylates, acrylics, hydrocarbons with a ring, in particular styrene, and hydrocarbons of the succinimide type.

18. A device according to claim 1, wherein the supply of substance is contained in a receptacle that is sufficiently closed to enable the substance to be conserved at ambient temperature in the device when not in use for a length of time in excess of at least 1 month.

19. A device according to claim 1, wherein the viscosity of the substance lies in the range 20 centipoises to 500 centipoises.

20. A device according to claim 1, wherein the substance contains hydrophilic or lipophilic active agents such as, for example, UV blockers (filters), and moisturizers, a care oil, an antioxidant, preserving agents, and anti-foaming agents.

21. A device according to claim 1, wherein the supply of substance is contained in a removable cartridge.

22. A device according to claim 1, wherein the supply of substance is contained in a non-removable receptacle.

23. A device according to claim 1, including a tube dipping into the supply of substance.

24. A device according to claim 1, wherein the supply of substance is contained in a receptacle which is different from the receptacle containing the gas.

25. A device according to claim 1, wherein the substance is contained in a flexible bag placed inside the receptacle containing the gas.

26. A device according to claim 1, wherein the valve has at least three positions, namely: a rest position; a position enabling a mixture of substance and gas to be dispensed; and a position enabling the gas to be dispensed on its own.

27. A device according to claim 1, including at least one substance feed duct and at least one gas feed duct, preferably two gas feed ducts, the ducts being arranged in such a manner that the gas delivered by the feed duct generates a pressure reduction suitable for sucking substance from the substance feed duct.

28. A device according to claim 1, wherein the gas is present in at least a liquid phase inside the receptacle containing the gas.

29. A device according to claim 1, comprising a supply of gas, at least one substance feed suitable for being put into fluid communication with a supply of said substance, the substance being sucked from the supply by suction established in the vicinity of said at least one substance feed by emission of said gas, and at least one shutter suitable for interrupting fluid communication between said at least one substance feed and the supply of substance.

30. A device according to claim 29, wherein the substance feed comprises at least one orifice.

31. A device according to claim 29, the device being arranged in such a manner as to reestablish fluid communication automatically between said at least one substance feed and the supply of substance while gas is being emitted.

32. A device according to claim 1, comprising a pushbutton suitable for acting simultaneously, directly or indirectly, on a gas dispenser valve and on the shutter, whereby fluid communication between said at least one substance feed and the supply of substance is established when the user presses on the pushbutton to cause the gas to be dispensed.

33. A device according to claim 1, comprising a first receptacle fixed on a second receptacle containing the gas.

34. A device according to claim 29, wherein the receptacle containing the substance and the receptacle containing the gas are fixed to each other in such a manner as to prevent them from moving relative to each other in use.

35. A device according to claim 1, wherein the receptacle containing the substance is annular in shape so as to leave a passage through which a control member can extend for controlling a valve fitted to the receptacle containing the gas.

36. A device according to claim 1, wherein the shutter is operationally connected to at least one element actuated by moving the pushbutton of the device.

37. A device according to claim 36, wherein said element comprises a hollow rod having at least one inside passage enabling the substance to reach said at least one substance feed orifice.

38. A device according to claim 1, wherein the shutter comprises at least one gasket suitable for shutting at least one orifice through which the substance can flow to reach

said at least one substance feed, and suitable for releasing said orifice at least in part while substance is being dispensed.

39. A device according to claim 38, wherein the shutter is constituted by a gasket mounted on a hollow rod, the rod being closed at its bottom end, the gasket being capable of bearing via its top face against a shoulder of the rod, the rod having at least one substance admission orifice passing therethrough, the orifice being of a diameter that is smaller than or equal to the thickness of the gasket, said gasket being suitable for coming into abutment via its bottom face against a stationary bearing wall when the hollow rod is pushed down, thereby causing the gasket to be compressed so as to release the admission orifice at least in part, thus enabling substance to flow towards said at least one substance feed.

40. A device according to claim 39, wherein the gasket bears via its periphery against the inside surface of a duct in which the hollow rod can move axially, the duct being capable of communicating freely with the outside.

41. A device according to claim 39, wherein the hollow rod is actuated by moving a pushbutton that controls emission of the gas.

42. A device according to claim 39, wherein the space inside the bearing wall against which the gasket can come into abutment via its bottom face communicates with the receptacle containing the substance, via an annular channel formed in a bottom end wall of said receptacle.

43. A device according to claim 1, comprising a pushbutton made by assembling together a bottom portion and a top portion.

44. A device according to claim 43, wherein the bottom portion is made integrally with an actuator rod extending along a passage in the receptacle containing the substance.

45. A device according to claim 44, wherein the control rod of the valve for delivering the gas is engaged in the actuator rod.

46. A device according to claim 29, wherein the gas is emitted via at least one gas outlet orifice.

47. A device according to claim 46, wherein the gas is emitted through at least two gas outlet orifices whose respective positions are selected in such a manner that the gas jets emitted by the orifices meet.

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XIV. APPENDIX E - RELATED CASES APPENDIX

NONE